

Report on the
INDUSTRIAL SURVEY
of the United Provinces

Cawnpore District

By

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CONTENTS.

	<i>Page.</i>
FOREWORD i—viii
CHAPTER I—	
1. General features	1
2. Area	ib.
3. Population	ib.
4. List of Ferries	ib.
5. List of Roads	2
6. Railways	5
7. Canals	6
8. List of Markets	ib.
9. List of Fairs	11
10. Cattle census, 1920	12
11. Movement of labour in Cawnpore	ib.
CHAPTER II—	
1. Art industries	14
2. Building materials	18
3. Food grains	21
4. Haberdashery	25
5. Hardware	26
6. Leather	30
7. Miscellaneous—	
(a) Cardboard boxes for medicinal phials and soaps, etc.	39
(b) Cane furniture	40
(c) The Indian Distillery, Cawnpore	41
(d) Electricity	42
(e) Forest	44
(f) Glue manufacture	45
(g) Jail industries	46
(h) Khajur (date) mattings	48
(i) Kites and yarn for kite-flying	49
(j) Lens-making for spectacles	50
(k) Moonj mondhas	ib.
(l) Hollow wares and tin works	51

	<i>Page.</i>
(m) Manufacture of tin-covered chir boxes ...	52
(n) Umbrella Manufacturing Company, Badshahi-naka, Cawnpore ...	53
8. Oils ...	54
9. Other industries connected with edibles—	
(i) Fishing ...	58
(ii) Ice factories ...	61
10. Textiles—Cotton—	
(1) Cloth ...	<i>ib.</i>
(2) Dyeing and bleaching ...	64
(3) Calico printing ...	67
(4) Ginning and pressing ...	68
(5) Weaving ...	70
CHAPTER III—Industrial possibilities of the district—	
1. Glue ...	74
2. Soap Factory ...	<i>ib.</i>
3. Hosiery ...	75
4. Alluminum wares ...	<i>ib.</i>
5. Utilization of slaughter-house products ...	<i>ib.</i>
6. Boot lace and eyelet-making ...	76
7. Cardboard boxes ...	<i>ib.</i>
8. Hollow wares and tin works ...	<i>ib.</i>
9. Hide ...	<i>ib.</i>
10. Tanning school ...	<i>ib.</i>
11. Museum ...	77
12. Furniture-making ...	<i>ib.</i>
13. Machinery for ordinary quality of boots and shoes ...	<i>ib.</i>
14. Fittings for harness, suit cases, etc. ...	<i>ib.</i>
15. Chrome tanning ...	<i>ib.</i>
CHAPTER IV—Statistics—	
1. Flour mills ...	78
2. Foundries ...	79
3. Leather ...	80
4. Miscellaneous ...	82
5. Oil mills ...	<i>ib.</i>
6. Other industries connected with edibles ...	84
7. Textiles ...	<i>ib.</i>
CHAPTER V—Directory—	
1. List of banks ...	87
2. List of boot and shoe manufacturers ...	<i>ib.</i>

CONTENTS.

iii

	<i>Page.</i>
3. List of important dealers in leather goods ...	88
4. List of hide merchants ...	89
5. List of tanneries ...	92
6. List of important rangias ...	<i>ib.</i>
7. List of important printing presses ...	<i>ib.</i>
8. List of dealers in gota ...	93
9. List of dealers in silver and gold ornaments ...	<i>ib.</i>
10. List of zardozi karkhanas ...	<i>ib.</i>
11. List of zardozi workmen ...	<i>ib.</i>
12. List of dealers in brass and copper wares ...	94
13. List of dealers in iron and galvanized sheet goods ...	<i>ib.</i>
14. List of lathe works ...	95
15. List of dealers in firewood ...	<i>ib.</i>
16. List of oil mills ...	<i>ib.</i>
17. List of technical schools ...	96
18. List of tin box manufacturers ...	<i>ib.</i>
19. List of principal cane furniture-makers ...	<i>ib.</i>
20. List of principal calico printers ...	<i>ib.</i>
21. List of ginning and pressing mills ...	<i>ib.</i>
22. List of cotton mills ...	97
23. List of woollen mills ...	<i>ib.</i>
24. List of principal flour mills ...	<i>ib.</i>
25. List of electrical works ...	98
26. List of chemical works ...	<i>ib.</i>
27. List of brush works ...	<i>ib.</i>
28. List of date-matting manufacturers ...	<i>ib.</i>
29. List of importers of cloth ...	<i>ib.</i>
30. List of wholesale dealers in cloth ...	99
31. List of retail dealers in cloth ...	101
32. List of arhatias dealing in cloth ...	<i>ib.</i>
33. List of grain merchants ...	103
34. List of furniture-makers ...	104
35. List of brick kilns ...	105
36. List of lime kilns ...	106
37. List of horn comb manufacturers ...	<i>ib.</i>
38. List of khajur mat and fan manufacturers ...	107
39. List of tent manufacturers ...	<i>ib.</i>
40. List of wooden block makers ...	<i>ib.</i>

	<i>Page.</i>
CHAPTER VI—Miscellaneous—	
1. Statement of kankar in Cawnpore district ...	108
2. Statement showing the places where reh is found	110
3. Statement regarding fibre in Cawnpore district	114
4. Slaughter-house statement	115
5. Census of (industrial) workers	<i>ib.</i>
6. Tariff Schedule for various articles exported to foreign countries	116
BIBLIOGRAPHY	117

FOREWORD.

CAWNPORE is a rapidly growing industrial centre in the United Provinces, and its trade chiefly consists in food grains, oilseeds, and other foodstuffs, spices, sugar, gur, cotton, jute, cotton and woollen yarn, Indian made textiles of all kinds, foreign piece-goods, hides and skins, leather and leather goods, tallow, oils—fixed and essential—and ghee, salts of alkalis, such as common salt, khari, saji and shora, timber, dyes, metals and metal ware—the trade in iron (old and new) being of fairly large dimensions. Goods worth crores of rupees are imported into the city and distributed to almost all parts of the provinces. The marketing system is almost the same for all kinds of articles as is described in the report for cloth and grain. Transactions are carried on through brokers and dealers, with the result that between the importer and the final consumer of goods at least four intermediaries intervene. To the advantage of the consumer this system can be improved by means of a co-operative arrangement among the dealers which may also benefit the general trade.

Many of the industries of Cawnpore district are centralized in the Cawnpore city. Their introduction is mostly due to the enterprise and initiative of the Europeans and most of the mills and factories are still run by Europeans or are under their management, though a few flour mills, oil mills, pressing and ginning factories and tanneries are to be found under purely Indian management. A woollen mill and some cotton mills and a jute mill also are under Indian management. These have complete organizations of their own and many of them have also provided workmen's quarters for their employees in order to secure more or less stable labour. They buy their raw materials from all over the provinces and also import it in no small quantities from other provinces. They have either contractors for the supply of raw material or send out their own agents to purchase it. They are most of them doing well, notwithstanding the temporary set-back caused by the slump in the trade leading to accumulated stocks.

But the condition of the cottage industrialists is far from satisfactory. Their system of work, production, purchase and sale of articles is the same as is noticed in other parts of the provinces and therefore troubles are more or less identical. A few are partially organized on the small factory system but most of them are suffering from entire lack of organization, want of credit and capital and old wasteful methods of production due to absence of knowledge of improved methods. They have neither the means to know nor the knowledge of cheap markets for the purchase of raw materials nor the best markets for the sale of their products. The result is that they buy and sell in the nearest market or through hawkers who bring materials to them at their houses. They would have been wiped off long ago but for the peculiar conditions and the vast extent of the country. Even now they require the greatest protection, otherwise they are returning to agriculture, affecting adversely both industries and agriculture. I would take a few examples from the report and show that not only has the capital to be found for them, improved methods discovered and brought to them, arrangements made for the purchase of materials and sale of goods, but even the ideas of business morality, thrift and standardized production have to be taught to them. The industries of India, and especially the art industries, flourished and improved under the fostering care of the kings and nobles, raises and big landholders for a long time and therefore the industrialists naturally depend upon and look to the patronage of the Government. Co-operation and research are the great needs of these people and the two remedies, if properly applied and in time will remove not a few of their wants.

(1) Karchobi and zardozi work is done in Cawnpore by 80 and 50 workmen who can each work 2 tolas of material on an average giving a daily consumption of 260 tolas. There is a difference of 2 annas in the wages of people working in the karkhanas and those working independently. Thus the artisans would gain about Rs. 32 a day if they could combine and own credit sufficient to be able to get work direct. A combination of these men is recommended. Goods worth two lakhs of rupees are manufactured every year. Co-operatively organized workers can very well run karkhanas of their own

and become independent of the middlemen and come in direct touch with their consumers.

(2) Rice husking by power has not yet commenced in Cawnpore although the export of paddy from the city is said to be worth 20 to 25 lakhs of rupees every year. Several power rice hulling plants are working in the province and this should engage the attention of some capitalist.

(3) Horn combs are made to a certain extent, but the industry is in the hands of the illiterate people. The needs of the industry are better organization and capital which would bring in improvements in the softening of horns and utilization of the tips and the shavings. Besides combs, other articles made of horn should be introduced, so that all parts of the horns could be properly used. This is an industry which should suit a small capitalist.

(4) (a) *Brass utensils*.—As at several other places in the provinces thalis, katoras, batuas, etc. of the usual heavy type are made at Cawnpore by the beating and casting processes by re-melting old vessels. These utensils are liked by the people because (1) of the fact that broken brass vessels can be exchanged and (2) they are not so fragile as China or glass ware. But the utensils which are manufactured in this district or elsewhere in the provinces are of a heavy type and therefore very costly. The need of the industry is therefore the manufacture of lighter vessels. Die presses are used in other provinces to produce such vessels and the same should be tried here. Cawnpore can easily take a lead and it will soon grow into a great distributing centre for them as it is for many other articles in other lines. The organization of the industry is the same as elsewhere. The dealer-capitalist gets the largest amount of profit and then the head factory man and last of all comes the labourer. The first supplies the capital and is responsible for the proper organization of the trade, the second supplies the expert knowledge and is responsible for the manufacture, while the third actually sweats but has neither the necessary means nor the knowledge. If the factory men were to organize themselves and thereby find capital, it should not be difficult to get the trade into their hands. But a large amount of capital has to be sunk into the business, and in the

present organization it is not very easy to eliminate the capitalist.

(ii) *Iron utensils*.—The industry is established on a fairly good basis, but similar utensils have begun to be manufactured in many other places also. As piece wages have already been worked out and are prevalent in the industry, a co-operative organization of the workers can very easily be managed. Their chief want is capital and touch with export markets. If the latter can be established, which it should not be difficult to do, a store should work very well, thereby improving the condition of the five to six hundred workers who are already in the industry. The profits in the industry are—

(a) dealers about 13 per cent. ;

(b) manufacturers about 11 per cent.

The former can be very easily diverted to the latter by means of a co-operative store.

(5) *Leather*—(i) *Hides and skins*.—There is no dearth of the raw hides and skins which are attracted to Cawnpore from many districts of the provinces and from outside the provinces also.

A portion of this material is tanned in the district, either (1) in power tanneries in the city, equipped and worked on modern lines, or (2) by small tanners working at their homes in the villages. The former deal with 2,000 hides a day or 400,000 hides in a year of 200 days; while the latter are able to tan 100,000 hides annually at the rate of Re. 1-4 to Re. 1-8 per hide. Together the district requires 500,000 hides annually, and has to depend on its imports which come to a very much larger figure. The surplus is exported to seaports and eventually finds a way to foreign countries of which the United Kingdom, Germany, Italy, the United States of America, Sweden, Norway, Spain, France and Australia are the chief ones. Apparently it will be more profitable to the country to export tanned leather in place of the raw material. But first of all the tanneries here are not able to produce as good leather and at the same price as is produced in foreign countries, and secondly, many of the countries purchasing our raw material have imposed an import duty varying from 20 per cent. to 50 per cent. on leather, while raw hides are usually admitted free, and lastly, the railways class tanned leather as no. 6 while raw hides are classed as no. 4 at Railway Risk. The combined

result of all these and shipping concession for raw hides is that India finds it more profitable to export raw hides than leather.

This condition can only improve by removing the various causes leading to the export of hides in preference to leather. The village tanner is in need of better methods of tanning and successful improvements in his mode of working should be demonstrated to him on the spot.

(ii) *Leather goods*.—Cawnpore is also a great manufacturing centre for leather goods and has gained a special reputation for its harness and saddlery suit cases and handbags, which it supplies to most other districts of the provinces.

Co-operative societies are likely to benefit both the tanners and the manufacturers of leather goods as the trade is mostly in the hands of capitalists and piece wages are prevalent.

(6) *Oils and allied industries*.—The district grows a lot of oilseeds as will be seen from the following table :—

Seed.	Area		
	1918-19. Acres.	1919-20. Acres.	1920-21. Acres.
Rape and mustard ...	157	270	158
Linseed ...	12	127	102
Sesamum ...	62	393	374

It also imports a very large quantity from all over the provinces. The total amount of seeds crushed in the district is estimated at 15 lakh maunds. Besides this, not a small amount is exported from Cawnpore in the raw state.

The various gins of the district are producing a large quantity of cotton seed of which not much industrial use is made at present. The industry is well organized with nine power mills and the production can easily increase with extended markets for the sale of oil. The need of this industry is the starting on a big scale of the allied industries of soap-making and the manufacture of paints and varnishes, margarine, etc., in which the local produce of mohwa and other oils would be consumed. The expression of cotton seed oil has still to be started in the province. This can only become popular in the district if some simple hand or bullock power appliance for delinting and husking the seed were available. At present cotton seed boiled entire is given as food to animals.

The animals do not require all the fat contained in the seed and much is wasted which could be expressed leaving sufficient in the cake for feeding the animals.

Cawnpore ought to take the lead. The Technological Institute can take up these subjects.

(7) *Textiles—Cloth.*—(i) Cloth is of two kinds (a) made in the mills (1) Foreign and (2) Indian, and (b) woven on hand-looms.

(a) (1) There are four intermediaries between the importing house and the actual consumer besides the many brokers that always infest the bazars and get a good commission every time that the cloth changes hands. If we take into consideration the intermediaries between the actual producer and the importing houses, perhaps their number will be still greater. There is no doubt that without any radical change in the system many of the middlemen's profits can be eliminated bringing cheaper cloth to the poor, e.g., if foreign firms could be induced to have their own shops in India, there will be no need for the importing houses or if the retailers could combine to have an organization sufficient to give them credit and find them the necessary money, there would be no need for the arhatiya or the byopari.

With an increase in the strength and consignmen security of the organization perhaps it will be able to get credit from the importing houses direct, thus eliminating all middle men.

(2) The wholesale dealers and some of the retailers buy direct from the Indian mills. There is no importing house in this case and many of the middlemen do not exist for this kind of goods. The result should be that this kind of cloth should sell cheap. But as a matter of fact it does not. Perhaps the mills are guided in their prices by those of the imported cloth or perhaps by want of sufficiently big mills and the comparative inefficiency of the Indian worker the cloth is produced at higher cost in India than abroad. The prices of this kind of cloth are also likely to come down with a fall in the prices of foreign cloth if the retailers backed by an organization could be brought into direct touch with the importing houses.

(b) Handloom woven cloth is also attracted in large quantities to Cawnpore and the late non-co-operation movement.

temporarily gave an impetus to it, resulting in the opening of several wholesale and retail "pure swadeshi" shops. With the decline of the enthusiasm in non-co-operation and the fall in the prices of foreign cloth many of these shops had to close down. The one way to keep alive the sale of such cloth is to bring down the prices so as to be able to compete with those of the foreign cloth. This will happen when the handloom weavers, backed by an organization of their own, can get cheap money. In these cases also there are a number of middlemen and the fall can only be brought about by bringing the manufacturers in direct touch with the consumers. The department has already given the matter due consideration and a scheme for organizing the weavers on an experimental basis is already in hand.

Dyeing.—Both yarn and cloth are dyed. Dyed yarn is greatly in demand in Cawnpore mills as well as throughout the provinces. Some of the mills have got their own dye houses; still there is much scope for separate factories undertaking to supply dyed yarn to other mills as well as to the outlying districts which have at present to depend for their supply on the yarn imported from Petlad and Ahmadabad. Cloth dyeing for the mills is done to a small extent by private firms but mostly all the mills own dye houses.

Printing.—A little coarse printing is done in the city and in Musanagar where ordinary jajams, quilts and lihafs are mostly produced. The work is mostly kachcha, and the suggestions made in the report about the training of weavers will be greatly useful if the workers could be organized on a proper basis. Night classes could then be easily organized for their benefit by the Government School of Dyeing and Printing, Cawnpore.

Durries.—Co-operative organization is also likely to benefit the durrie workers. They are about 500 in number in two muhallas and the system of payment by piece work has already been introduced here.

Suggestions for introducing several new industries will be found in Chapter III of the report. The success of small hosiery mills is doubtful as they will have to face the competition with cheap Japanese articles with which the markets are full and also with the large scale production of the big mills.

The report is drawn upon lines similar to those of the other reports. It has been revised by Messrs. S. T. Gadre, M.Sc., A.I.I.Sc. (Industrial Chemist to Government), and J. P., Srivastava, M.Sc., A.M.S.T., of the Civil Lines, Cawnpore, who have given several useful suggestions. Our thanks are due to them for all the assistance they have rendered ungrudgingly.

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CHAMPA RAM MISRA.

2nd January, 1924.

CHAPTER I.

INTRODUCTION.

1. General features.

(a) Boundaries.

North-east.—Districts of Hardoi and Unao.

South.—Districts of Hamirpur and Jalaun.

South-east.—Fatehpur district.

North-west.—Farrukhabad district.

West.—Etawah district.

(b) General.

The district is an alluvial plain sloping gently from north-west to south-east. The interior surface is slightly undulating on account of the action of several watersheds.

2. Area.

1,518,016 acres.

3. Population.

1,148,664 in the year 1921.

4. List of Ferries.

River		Tahsil.		Ferry.
Sengar	...	Derapur	...	Derapur.
Do.	...	Ditto	...	Indrukh.
Rind	...	Ditto	...	Sundarpore Gajan.
Pandu	...	Ghatampur	...	Chirla.
Do.	...	Ditto	...	Mahrauli.
Do.	...	Ditto	...	Nawada Ujagar.
Do.	...	Ditto	...	Sichauli.
Do.	...	Ditto	...	Kundauli.
Rind	...	Ditto	...	Sirsi.
Do.	...	Ditto	...	Birsinghpore.
Do.	...	Ditto	...	Malkhanpur.
Do.	...	Ditto	...	Gopalpur.
Do.	...	Ditto	...	Akbarpur Barwi.
Non	...	Ditto	...	Gauri Madhuri.
Do.	...	Ditto	...	Nandana.
Jumna	...	Bhognipur	...	Khartala.

River.	Tahsil.	Ferry.
Ganges	... Bilhaur	... Hukin.
Do.	... Ditto	... Sajeti Badshahpur.
Do.	... Ditto	... Nanamau.
Do.	... Ditto	... Akbarpur Saing.
Do.	... Ditto	... Sarayan Radhan.
Do.	... Ditto	... Bande Mata.
Do.	... Ditto	... Berandighat.
Do.	... Ditto	... Pachmahilaghat.
Pandu	... Ditto	... Bikru.
Ganges	... Cawnpore	... Dhouri.
Do.	... Ditto	... Fajmau.
Do.	... Ditto	... Domanpur.
Do.	... Ditto	... Permat.
Do.	... Ditto	... Bithur.
Do.	... Ditto	... Patkapur.
Do.	... Ditto	... Rawatpur.
Do.	... Ditto	... Baqarganjghat.
Do.	... Ditto	... Najafgarh.
Non	... Ditto	... Ramel.
Pandu	... Ditto	... Panhar.
Sengar	... Akbarpur	... Bihar.
Rind	... Ditto	... Birpur Nakasia alias Gutaiya.
Do.	... Ditto	... Medauli.
Do.	... Ditto	... Bewain.
Do.	... Ditto	... Bhugyora.
Do.	... Ditto	... Pachgawan Salikpur.
Do.	... Ditto	... Bhiturpur.

5. List of Roads.

(i) Metalled Roads.

	Length. Miles.
<i>Tahsil Cawnpore—</i>	
Grand Trunk Road ...	33
Cawnpore-Hamirpur Road ...	17
Cawnpore-Jhansi Road ...	15
Kalyanpur-Bithur Road ...	8
Narwal to Sarsaul ...	6
Mahrajpur to Najafgarh ...	4
Bidhnuun to Bidhnu station ...	1
Railway feeder Chakeri ...	$\frac{1}{2}$

	Length. Miles.
<i>Tahsil Bilhaur—</i>	
Grand Trunk Road from Mandhana to Chitamau	36
Ankin to Araul	2½
<i>Tahsil Derapur—</i>	
Rura to Derapur	9
<i>Tahsil Ghatampur—</i>	
Cawnpore-Hamirpur Road	21
Hamirpur Road railway station to Cawnpore-Hamirpur Road	2½
Ghatampur railway station to Cawnpore-Hamirpur Road	½
Ramsaripurwa railway station to Cawnpore-Hamirpur Road	¼
Hamirpur Road railway station to Baripal	1½
<i>Tahsil Bhognipur—</i>	
Lalpur to Jumna ghat (Kalpi)	18
<i>Tahsil Akbarpur—</i>	
Akbarpur to Barah	3½
Akbarpur to Mati	3
Akbarpur to Rura	4

(ii) Unmetalled Roads.

<i>Tahsil Cawnpore—</i>	
Bhaonti to Bhimsen	3
Bhimsen to Bhaupur	2
Karbigwan to Bindki	3
Salempur to Ghatampur	6½
Jajmau to Grand Trunk Road	2
Maharajpur to Narwal	9
Narwal to Karbigwan	8½
Ahirwan to Narainpore	16
Bithur to Bidhuna	2
Najafgarh to Barigarhu	11
Sachendi to Bidhnu	11
Jajmau to Salimpur	8
Narwal to Tiwaripur	7
Narwal to Para	3
Purwamir to Najafgarh	7
Rawatpur to Maswanpur	2½

	Length. Miles.
Sapai to Harbaspur	6
Kalyanpur to Panki	4
Karbigwan to Karbigwan railway station ...	2
Kalyanpur to Sheoli	6
<i>Tahsil Bilhaur—</i>	
Makanpur to Rasulabad	17½
Bithur to Bidhuna	13
Bilhaur to the border of Farrukhabad district	10
Makanpur to the border of Farrukhabad district	4
Nanamau to Rasulabad	27
Sheoli to Seraiganj	12
<i>Tahsil Derapur—</i>	
Rasulabad to Haramau	27
Rasulabad to Mangalpur	14
Rasulabad to Kalyanpur	33
Mangalpur to Derapur	10
Derapur to Sikandra	12
Derapur to Akbarpur	5
Derapur to Bhognipur	5
Rasulabad to Makanpur	7
Dandibar to Kandhi	4
Bhaura to Phaphund	4
Sargaon to Etawah	16
Mangal to Phaphund	6
Mangalpur to the border of Bhognipur ...	12
<i>Tahsil Ghatampur—</i>	
Mughal Road	21
Ghatampur to Salimpur	19
Bhaupur to Fatehpur	9½
Ghatampur to Gajner	10
Gajner to Musanagar	5½
Baripal to Amauli	5
Baripal to Srinagar	13
Baripal to Bhitrigaon	16
Baripal to Kora	8
Baripal to Rampur	5½
Birbal	13
Ahirwan to Narainpur	4

	Length. Miles.
Najafgarh to Barigarhu	1
Sarh to Kora	8
<i>Tahsil Bhognipur—</i>	
Akbarpur to Rasohan	13
Bhognipur to Bibapur	9
Jhinhak to Bijamau	11
Chaparghat to Kalpi	10
Pukhrayan to Rasdan	12
Rasdan to Rajpur	6
Chandpur to the border of Etawah	14
Musanagar to Gajner	5
Absaria to Aurangabad	8
Bidhauri to Ismailnagar	6
Amrodha to Mughal Road	6
Pukhrayan to Gajner	14
<i>Tahsil Akbarpur—</i>	
Akbarpur to Rasdan	4½
Ghatampur to Etawah Road	17
Karipur to Gajner	17
Sheoli to Bhaupur	15½
Sheoli to Tigain	15
Bithur to Bidhuna	7½

6. Railways.

Railways.	Length. Miles.	Stations.
E. I. Ry., Main Line.	51	Karbigwan, Sarsaul, Chakeri, Cawnpore, Panki, Bhaupur, Maitha, Rura, Ambiyapur, Jhinhak.
B., B. and C. I. Ry., Cawnpore-Achhnera Section.	46	Cawnpore, Anwarganj, Rawatpur, Kalyanpur, Mandhna, Chaubepur, Barraipur, Utsipura, Dhaur-salar, Bilhaur, Araul and Chitamau.
S. and N.-W. Ry., Main Line.	4	Anwarganj, Cawnpore, Cawnpore Bridge.
G. I. P. Ry., Cawnpore-Banda Branch.	26	Cawnpore, Juhi, Bidhinu, Ramsari-purwa, Ghatampur.
G. I. P. Ry., Cawnpore-Jhansi Branch.	43	Cawnpore, Juhi Bhimsen, Pama, Lalpur, Malasa, Pukhrayan, Chaura.

7. Canals.

The district is well provided with a network of canals and distributories.

Canals.	Irrigated area. Acres.
1. Fatehpur Branch of the Lower Ganges Canal	191,144.
2. Cawnpore Branch of the Lower Ganges Canal	
3. Bhognipur Branch of the Lower Ganges Canal	
4. Extension of Ghatampur-Fatehpur Branch	
5. Etawah Branch	

N.B.—The length of the Fatehpur Branch of the Lower Ganges Canal is about 270 miles.

8. List of Markets.

Tahsil Bilhaur—	Market days.
Bilhaur ... ..	... Daily.
Araul ... ..	... Wednesday and Sunday.
Makanpur ... ..	... Monday and Thursday.
Utha ... ..	... Monday and Friday
Deoha ... ..	... Wednesday and Saturday.
Rahimpur Bisdhan	... Wednesday and Sunday.
Sinbra-Farashikot ... ..	... Tuesday and Saturday.
Naila ... ..	... Monday and Friday.
Gangapur ... ..	... Monday, Saturday and Tuesday.
Mirzapur 4 akutia ... ..	... Saturday and Tuesday.
Birhun ... ..	... Ditto.
Ari Nivada ... ..	... Tuesday, Thursday and Saturday.
Bibipur ... ..	... Monday and Thursday.
Pura ... ..	... Wednesday and Saturday.

CAWNPORE DISTRICT.

7

Market days.

Dhaursalar	...	...	Sunday, Friday and Tuesday.
Anti	...	...	Sunday and Wednesday.
Biraman	...	...	Friday and Tuesday.
Turna	...	...	Ditto.
Aner	...	...	Thursday and Sunday.
Tishti	...	...	Monday and Thursday.
Bari Alipur	...	...	Tuesday and Saturday.
Ramsari	...	...	Thursday and Sunday.
Kakwari	...	...	Wednesday and Sunday.
Kakupur	...	...	Monday and Thursday.
Chaubepur	...	...	Sunday and Thursday.
Secrajpur	...	...	Wednesday and Saturday.
Jagdishpur	...	...	Tuesday and Friday.
Gabraha	...	...	Monday and Friday.
Bhagwantpur	...	...	Wednesday and Saturday.
Dalipnagar	...	...	Ditto.
Gambhirpur	...	...	Tuesday and Saturday.
Bansathi	...	...	Wednesday and Saturday.
<i>Tahsil Cawnpore—</i>			
Rawatpur	...	...	Monday and Friday.
Barasarohi	...	...	Wednesday and Saturday.
Tikra	...	...	Sunday and Thursday.
Panki-Gangaganj	...	...	Ditto.
Sachendi	...	...	Wednesday and Saturday.
Narayanpur	...	...	Monday and Friday.
Dul	...	...	Ditto.
Mandhana	...	...	Ditto.

			Market days.
Kaliyanpur	...	...	Tuesday and Friday.
Singhpur	...	...	Sunday and Thursday.
Baikunthpur	...	...	Tuesday and Saturday.
Bithur	...	...	Daily.
Kaindha	...	...	Sunday and Thursday.
Kathara	...	...	Tuesday and Friday.
Maharajpur	...	...	Wednesday and Saturday.
Ramaipur	...	...	Ditto.
Khirsa	...	...	Sunday and Thursday.
Sehoganj Choorai	...	...	Monday and Thursday.
Narwal	...	...	Tuesday and Friday.
Sarsaul	...	...	Tuesday and Saturday.
Purwa Mir	...	...	Ditto.
Najafgarh	...	...	Monday and Friday
Harchand Khera	...	...	Thursday and Sunday.
Kulgaon	...	...	Ditto.
Tilsabri	...	...	Monday and Friday
Manghawa	...	...	Tuesday and Friday.
Mohsinpur	...	...	Wednesday and Saturday.
Sambhua	...	...	Thursday and Sunday.
<i>Cawnpore City—</i>			
Parade	...	...	Tuesday, Thursday and Saturday.
Beconganj	...	...	Wednesday and Sunday.
Rani-ki-Garhaiya	...	...	Daily.
Collectorganj	...	...	Do.
Hatia and Khoya Mandi	...	...	Monday and Friday.
Hoolaganj	...	...	Wednesday and Sunday.
Mirpore Cantonments	...	...	Monday, Thursday and Saturday.
Nawabganj	...	...	Daily.

		Market days.
<i>Tahsil Derapur—</i>		
Asalatganj	...	... Thursday and Sunday.
Bhikderi	...	... Tuesday and Friday.
Rasulabad	...	... Saturday and Wednesday.
Jot	... ..	... Tuesday and Saturday.
Usari	... ..	... Thursday and Sunday.
Puranpurwa	...	... Tuesday and Saturday.
Samayun	...	... Wednesday and Saturday.
Ratanpur	...	... Ditto.
Derapur	...	... Ditto.
Mungisapur	...	... Sunday and Thursday.
Sandalpur	...	... Monday and Thursday.
Galwapur	...	... Monday and Friday.
Chiloli	... ..	... Wednesday and Saturday.
Sargaon Buzurg	...	... Tuesday and Friday.
Banipara Maharaj	...	... Wednesday and Sunday.
Sithmara	...	... Tuesday and Friday.
Khanpur Dilwal	...	... Monday and Friday.
Jhinkhak	...	... Sunday and Thursday.
Mangalpur	...	... Tuesday and Saturday.
Nonari	...	... Wednesday and Saturday.
Aurangabad Dalchand	...	... Ditto.
<i>Tahsil Ghatampur—</i>		
Baripal	...	... Monday and Friday.
Nauranga	...	... Sunday and Thursday.
Sajeti	... ..	... Sunday and Wednesday.
Girsi	... ..	... Sunday and Thursday.

			Market days.
Umari	...	...	Monday and Friday.
Padri Lalpur	...	...	Tuesday and Friday.
Daulatpur	...	...	Sunday and Thursday.
Reona	...	...	Tuesday and Friday
Ghatampur	...	...	Tuesday and Saturday.
Bhadras	...	...	Monday and Friday.
Bibipur	...	...	Sunday and Thursday.
Barigarahu	...	...	Monday and Thursday.
Bhitrigaon	...	...	Ditto.
Patara	...	...	Wednesday and Saturday.
Tilsaraha	...	...	Monday and Thursday.
<i>Tahsil Bhognipur—</i>			
Satti	...	...	Monday and Friday.
Rajpur	...	...	Sunday and Wednesday.
Sikandra	...	...	Monday and Friday.
Gauri Karan	...	...	Tuesday.
Rasdhan	...	...	Saturday and Tuesday.
Hariharpur	...	...	Wednesday and Sunday.
Khashara	...	...	Sunday and Wednesday.
Khwajaphool	...	...	Thursday and Sunday.
Pukhrayan	...	...	Wednesday and Saturday.
Muhammadpur	...	...	Tuesday and Friday.
Baror	...	...	Thursday and Monday.
Musanagar	...	...	Sunday and Thursday.
Amrudha	...	...	Daily.

		Market days.
<i>Tahsil Akbarpur—</i>		
Akbarpur	...	... Thursday and Sunday.
Bhiknapur	...	... Saturday and Wednesday.
Rura	...	... Monday, Wednesday and Saturday.
Gahlon	...	... Wednesday and Sunday.
Bhaupur	...	... Thursday and Sunday.
Maitha	...	... Tuesday and Saturday.
Niholi	...	... Monday and Friday.
Kashipur	...	... Monday and Thursday.
Rania	...	... Monday and Friday.
Barah	...	... Tuesday and Friday.
Jignipurwa	...	... Thursday and Sunday.
Gajner	...	... Wednesday and Saturday.
Fatehpur Roshnai	...	... Thursday and Sunday.
Mohana	...	... Ditto.
Maghpur	...	... Monday and Friday.
Bewain	...	... Tuesday and Saturday.
Bhikhar	...	... Wednesday.
Sunari Bahadurpur	...	... Wednesday and Saturday.
Bhitripur	...	... Sunday and Thursday.

9. List of Fairs (attendance 5,000 or above).

Name of Fair.	Place.	Date.
<i>Tahsil Bilhaur.</i>		
Makanpur	... Makanpur	... Magh Sudi 5th, lasts for 15 day, one week before and one week after Basant Panchami.
Kanslila	... Chaubepur	... Kartik Badi 6th.

Name of Fair.	Place.	Date.
<i>Tahsil Derapur.</i>		
Sheoratri	... Banipura	... Third Sunday in Phagun, Sheoratri day.
<i>Tahsil Cawnpore.</i>		
Ramlila	... Parade, Cawnpore	Kuar Sudi 10th.
Ganga Ashnan	... Bithur	... Kartiki Puranmasi.
Makarki Shankrant (Khichrahi)	Do. ...	... Makarki Shankrant.
Dasehra	... Do. ...	... Jeth Badi 10th.
Barah Devi	... Juhi Kalan	... Chait Sudi 8th.
<i>Tahsil Bhognipur.</i>		
Mahabirji	... Zainpur	... Last Tuesday in Bhadon.
<i>Tahsil Akbarpur.</i>		
Ghazipur	... Gajner	... First Sunday in Jeth.

10. Cattle census, 1920.

Bulls and bullocks	...	...	...	175,325
Cows	...	...	...	134,928
Buffaloes	...	...	...	47,333
She-buffaloes	...	...	...	91,147
Young stock	...	...	...	244,865
Sheep	...	...	...	43,618
Goats	...	...	...	150,564
Horses, ponies and young stock	...	...	...	14,684
Mules	...	...	...	139
Donkeys	...	...	...	5,700
Camels	...	...	...	611

11. The movement of labour in Cawnpore.

Cawnpore is a great industrial centre in these provinces.

No special system of recruitment of labour obtains in Cawnpore. The factory life has become sufficiently popular and the flow of labour is almost spontaneous.

Labour is drawn mostly from agricultural labouring classes living on the outskirts of the city within a radius of about 5 to 6 miles. The districts in Oudh, such as Unao, Bara Banki, Sandila, Fyzabad, Partabgarh, Rae Bareli, Sitapur, Sultanpur and others also supply a very large number of labourers.

Besides the Mazdur Sabha, an organization of labourers registered under Act XXI of 1860, there is no other labour union or guild in Cawnpore for any particular industry. Caste does not seem to play any part in the choice of work these days as it used to do before and the factory life which is getting popular every day appears to be killing caste prejudices.

In some cases the labour is permanent while in others it is seasonal. In the latter are those labourers who run up to take work in factories during the period of agricultural inactivity.

For this seasonal labour the periods of unemployment have been unavoidable. Female labour which is drawn chiefly from the lower Hindu castes such as Chamar, Kori and Lodhs, is generally put on jobs requiring no special skill. The labour population all told is estimated to be about 60,000 males, 25,000 females and 15,000 children.

The various amenities of life in the shape of proper housing, medical attendance, games, amusement and education have been provided by Messrs. Cooper Allen and Company and the Woollen Mills, Limited, to about 25 to 33 per cent. of their operatives. These settlements have accommodation for about 2,000 to 2,500 labourers. In the case of females maternity benefits have been provided only by British India Corporation. Absence before childbirth is not general and is for a very short time, but, after delivery, the period of absence extends up to 40 days and no payment is said to be made for that period. Industrial expansion is expected outside the city and the improvement trust is taking steps to provide for it.

Several economic causes have combined to increase wages by about 100 per cent. during the last 10 years. The system of payment of wages both by piece work and by time prevails. Enquiries show that where the outturn of work depends on the industry of the labourer concerned, payment by piece work is more economical and is also preferred by most labourers. Contractors mostly like to make payments by piece work. But in the case of small printing presses where "overtime" payments are very often made the system of payment by time is very much preferred both by the employers and the employees. As against skilled labourers women earn very much less. Their usual wages being 5 to 6 annas a day, while males usually get up to 10 annas a day.

CHAPTER II.

DESCRIPTION OF, AND SUGGESTIONS FOR THE IMPROVEMENT OF THE VARIOUS INDUSTRIES OF THE DISTRICT.

1. Art industries.

1.—*Gota*.—Gota is not manufactured in Cawnpore, but is imported from Lucknow, Agra, Delhi and Benares to the extent of Rs. 1,80,000 worth annually. Lucknow gota is considered to be inferior to Agra gota and Benares gota is said to be the best. Imitation gota, in which smoked lead or copper wire is used instead of silver wire is also imported by six firms in Chowk from their Delhi agencies. There are sixteen firms altogether who deal in gota, both real and imitation.

2. *Zardozi*.—This is the name given to embroidery done with gold and silver wire on different kinds of cloth, such as velvet, satin and silk. Salma, sitara, bhogli, kora and londhni are the different articles made of gold and silver wire used in this particular work.

Organization.—In two karkhanas in Chowk the owners have their own frames and instruments and work is done there on piece wage system. Cawnpore City has about 80 workmen who do karchobi work and 50 who do "tarkashi" or "kamdani" work. Most of these workmen are attached to one or the other of the above karkhanas. The wages paid by a karkhana are 10 annas per tola for karchobi work and 12 annas per tola for kamdani work. A few independent workmen accept orders from casual customers direct or through "gotawalas." In such cases they charge 12 annas per tola for karchobi and 14 annas per tola for kamdani work, and work is all done to order and the customer supplies the cloth also.

Salma, sitara and kamdani wire are purchased from the firms dealing in gota mentioned above. Salma and sitara are imported from Benares, Bombay, Lucknow and Surat and kamdani wire from Agra and Lucknow. Benares material is considered to be the best—the next best is that received from

Bombay and then that which comes from Lucknow. Surat material is said to be very inferior in quality. The best kamdani wire is that received from Agra.

Prices.—The prices of salma and sitara are as follows :—

Place of import.	Prices per tola.	
	Rs. a.	Rs. a.
Lucknow ...	1 6	to 1 12
Benares ...	1 8	,, 2 0
Bombay ...	1 10	,, 2 4
Surat ...	1 0	,, 1 3

The material of cheap quality is sold at a profit of 2 annas per tola and that of superior quality at 3 annas per tola.

Zardozi material to the extent of 30,000 tolas is annually imported into the city.

The sale is all local with the exception of about 200 to 300 tolas exported to Paris or England by Jagat Narain and Company.

Marketing system.—No stock of ready-made articles is kept. All embroidery work is made to order. Orders for zardozi work are mostly local and received from Marwaris. The work is brisk during marriage season only.

Daily outturn of a workman.—With light material one man can work 1 to 3 tolas of material in karchobi and kamdani. But if the material is heavy the outturn of kamdani work is from 2 to 4 tolas and of karchobi work from 2 to 6 tolas.

3. *Gold and silver ornaments.*—There are a number of firms dealing in gold and silver bars and ornaments in Chowk and Nayagani. Gold and silver bars each weighing Rs. 13-5-4 and Rs. 2.800 respectively is imported daily from Bombay and not from Calcutta.

Import.—Besides bars of gold and silver, ready-made ornaments are also imported from different places. Biyoparis, who are generally goldsmiths, personally bring for sale silver ornaments from Shahjahanpur, Jubbulpore, Katni, Delhi, Agra and Lucknow. Silver jewellery of Cuttack is also brought here for sale. The demand for this style of ornaments, though restricted, seems to be definite in the Cawnpore market. The speciality about this style is its light weight but it has a complicated design. In the jewellery market are to be found

various Indian artistic designs in ornaments, such as the old Lucknow style, the Jaipur style, the Punjab style from Lahore and Amritsar.

Export.—The sale of ornaments is all local. People from different villages in Cawnpore district visit the city and make purchases. Cawnpore being a great industrial centre the number of such visitors is very large. Out of an estimated daily sale of Rs. 50,000, Rs. 10,000 worth of ornaments are sold locally and Rs. 40,000 worth of gold and silver bars are exported to almost all over the United Provinces, Cawnpore being a big market for gold and silver bullion.

Wages.—The following figures will give an approximate idea of the kind of remuneration paid to skilled labour in this particular branch of industry:—

	Rs.	a.	p.	Rs.	a.	p.	
Silver or gold solid ornaments, such as "hansli, kara and anant."	...	0	0	9 to 0	1	0	per rupee in weight.
<i>Hollow silver ornaments—</i>							
Chain	...	0	3	0			per rupee in weight.
Lachha	...	0	1	6			per rupee in weight.
Kakania	...	0	2	6			per rupee in weight.
Baneli	...	0	2	6			per rupee in weight.
Chandan-har	...	0	3	0			per rupee in weight.
Tauq	...	0	2	0 to 0	3	0	per rupee in weight.
Bali (earrings) and pattas (pendants)	0	2	6 and 0	3	0		per rupee in weight respectively.

Hollow gold ornaments—

	Rs. a.	p.	Rs. a.	p.
Kara ...	3	0	0	to 5 0 0 a pair.
Anant having copper inside and gold plate outside ...	3	0	0	,, 5 0 0 ,,

N.B.—Whatever the amount of gold, the wages would be the same as above. For all other gold ornaments the wages are Re. 1-8 to Rs. 2 per Re. 1 in weight.

Organization.—The manufacturers of gold and silver ornaments are all sonars who either own their shops or are attached to the shops of well-to-do goldsmiths.

Marketing system.—There are about 400 to 500 shops in Chowk and Navaganj which deal in bars as well as in ornaments. No wholesale business is done in ornaments but in bars which big firms such as Hazarimal Sohanlal and Bilas Rai Hardat Rai in Navaganj carry on. The shops in Chowk mostly carry on business in ready-made gold and silver ornaments.

Profits.—The dealers generally make a net profit of Re. 1 per tola and they also get a commission of 2 annas to 4 annas per tola from goldsmiths. The profits to dealers by sale of gold and silver bars are estimated to be Re. 1 per cent. The profits of the sonar are proverbial. They usually mix alloy with the metal and the quantity of the alloy mixed increases the amount of their profits. The sonars are said to be making a profit of about 20 per cent. on goods made to order and 25 to 30 per cent. on ready-made goods.

A goldsmith running a small factory can handle 5 tolas of gold metal every day getting Rs. 10 as his wages. Out of this he keeps one-fourth to himself and distributes three-fourths among the actual workmen.

4. *Drawing of silver wire.*—One Lala Sita Ram has started the drawing of silver wire by means of machines. His factory is fitted with five machines—three for drawing flat wire and two for drawing plates. These machines are worked by means of 4 H. P. electric motor. The outturn per hour is 200 tolas of wire and plates and the wages per 100 tolas are between Re. 1 and Re. 1-8. The expenditure of electricity per hour is estimated to be one unit at 3 annas a unit. The wire

and plates turned out in this factory are consumed locally for the manufacture of ornaments. This is an industry which should commend itself to small capitalists.

2. Building materials.

(a) Brick kilns.

There are in all 57 brick kilns in the district. Out of these 53 are in Cawnpore tahsil and the rest in the other tahsils of the district. They are either "desi pajawas" or Bull's kilns. The total annual production of bricks in the district is 454,097,000 bricks.

Organization.—The brick earth is dug out of the ground ordinarily taken on three years' lease from zamindars on payment of a royalty of Rs. 150 to Rs. 300 per bigha.

Classification of bricks.—Bricks of the following five descriptions are prepared and their prices are as follows:—

	Rs.
First class	20 per thousand.
Second class	15 „ „
Third class	10 „ „
Kalamu	15 „ „
Khanjar	13 „ „

Out of 1,000 bricks burnt in a kiln the bricks of each description turned out is in the following proportion:—

First class	500
Second class	100
Third class	150
Kalamu	100
Khanjar	100
Wastage	50
Total	1,000

Profits.—In turning out 1,000 bricks the margin of profits is calculated to be as follows:—

Cost of production—

	Rs. a.
Water	0 2
Royalty for earth	0 4
Coal dust	5 0

	Rs. a.
Moulding charges ...	... 2 4
Filling and discharging ...	... 0 8
Supervision charges ...	... 0 8
Cartage ...	... 4 0
	<hr/>
Total cost	... 12 10
Selling price ...	... 15 7
	<hr/>
Savings ...	... 2 13 or 23 per cent.

Season.—The work is dull during the rains.

(b) *Lime and Surkhi.*

There are 12 or 13 lime and surkhi mills scattered over different muhallas of the city such as Bansmandi, Bhannanapurwa, Cooperganj and Cantonment.

The daily outturn of lime in all the mills is about 5,000 to 6,000 cubic feet, while that of surkhi about 3,000 cubic feet. The sale price of lime ranges between Rs. 26 and Rs. 36 per 100 cubic feet, including cartage at Rs. 2 per 100 cubic feet.

Lime is made by grinding burnt kankar and the kankar is burnt in the following way :—

- (1) A pyramidal structure of about 15 feet in height is raised of alternate layers of kankar and babul fuel. The first layer, which is about 15 inches high, consists of cow-dung cakes and babul wood. The second layer contains kankar up to the height of 1 foot to 2 feet according to the quality of the fuel. The third layer is of coal cinder 2 inches thick and the fourth is of kankar, and so on. The burning and cooling of kankar takes about a month. In summer the kankar burns quickly but cools down slowly. In winter the case is just the reverse.

Some of the concerns have got pakka kilns and some have no mills for grinding kankar. Such concerns as have no mills get kankar ground by other mills at Rs. 7 per 100 cubic feet.

Raw material.—Bichhua kankar from Ajgain and Kalpi kankar, known as "Kalpi bajri," are considered to be first class materials for building purposes. The next in quality

comes the "Ajgain (district Unao) chat." The best kankar is very scarce in Cawnpore district as quarries are exhausted. The bed of kankar is ordinarily 2 feet to 4 feet deep and at some places about 8 feet to 9 feet and at places 1 foot to 1½ feet. Hard clay available in Cawnpore at Rs. 10 to Rs. 15 per 100 cubic feet is utilized for lime making and is purchased in quantities by the Public Works department, the District Board and the Municipal Board. "Ajgain chat" has found favour with the above departments and is purchased at the rate of Rs. 20 to Rs. 22 per 100 cubic feet. Bichhua kankar at Rs. 10 per 100 cubic feet is used chiefly in road making and very seldom in lime making.

The clay dealers get hard "matti" (clay) for purposes of making lime in the city within a radius of 10 miles. On account of scarcity of good kankar in Cawnpore surkhi (ground bricks), coal dust and sand mixed with Katni lime are chiefly used as mortar for pakka masonry work.

Marketing system.—The mills supply lime to their customers to order on site, charging cartage at the rate of Rs. 2 per 100 cubic feet, which is included in the price of the lime.

Profits—

	Rs.
Price of 100 cubic feet of kankar	... 12
Burning charges per 100 cubic feet	... 4
Grinding charges per 100 cubic feet	... 4
Miscellaneous, including clerk's pay, etc. per 100 cubic feet	... 2
Cartage	... 2
	—
Total	... 24
Selling price per 100 cubic feet	... 28
	—
Savings	... 4
	—

Surkhi is made from brick-bats and is sold at the rate of Rs. 12 per 100 cubic feet. Old brick-bats from broken dilapidated houses are also utilized for the purpose and are available at Rs. 8 to Rs. 10 per 100 cubic feet.

3. Food grains.

(a) *General.*—Cawnpore is a great distributing centre for grains.

Import.—The following grains are imported into the city from the places noted against each of them, and the total annual import is estimated to be worth 2 crores of rupees :—

Grain.	Place of import.	Annual estimated value.
Wheat	... Punjab, Central Provinces, Gonda, Bahraich, Lucknow, Bara Banki, Saugor and Hardah	... 50 to 60 lakhs.
Chana (gram)	Punjab, Gonda, Bahraich, Nanpara, Bindki, Maudaha, Banda, Hamirpur and Jhansi	... 30 ,,
Arhar	... Etawah, Bindki, Jalaun, Jhansi, Kalpi Gonda and Bahraich	... 25 ,,
Rice	... Burma, Naugarh, Shohratganj, Gonda, Basti, Gorakhpur, Bengal, Bihar, Central Provinces, Pilibhit, Bareilly, Dehra Dun and Tanda (in small quantity). Basti is the chief exporter	... 20 to 25 ,,
Moong and Urd	Bindki, Kalpi, Jalaun, Hardoi, Lakhimpur, Sitapur, Cawnpore, Lucknow and Unao	... ..
Jau (barley)	... Punjab, Central Provinces, Gonda, Bahraich, Lucknow, Bara Banki, Saugor and Hardah	... 20 ,,

Grain.	Place of import.	Annual estimated value.
Bajra	... Central Provinces, Gonda, Bahraich, Lucknow, Bara Banki, Saugor and Hardah ...	15
Juar	... Jhansi, chiefly from Kalpi, Cawnpore, Bindki and Central Provinces ...	
Makai	... Local ...	
<i>Export—</i>		
Wheat	... Not exported but consumed by local mills.	
Ata, Suji and Maida.	... Exported by local mills to Lucknow, Jhansi, Farrukhabad, Bara Banki, Hardoi and Bareilly districts and also other places in the United Provinces. Calcutta imports seldom.	
Gram	... This is converted into "dal" for which Cawnpore is famous. Dal is exported chiefly to Rangoon and Calcutta. The local sale is also enormous.	
Arhar	... This is converted totally into "dal" which is exported to Rangoon, Bombay, Calcutta, Gujrat, Rajputana, Jhansi, Saugor, Hardah, the whole of United Provinces and Central Provinces. "Dal" of Cawnpore district is superior in quality and dal kibbling is the staple industry of this district.	
Rice	... Basti and Gorakhpur rice is exported to Gujrat, Jhansi, Rajputana, Kalpi, Jalaun and Farrukhabad. Central Provinces rice is exported only to Cawnpore and Farrukhabad districts. Bihar and Bengal rice commands sale in Cawnpore district, Farrukhabad and Jhansi. Rajputana imports very seldom. Burma rice is consumed in Cawnpore district only.	

Moong and Urd " Dal " devoid of husk is exported to places all over India, while " dal " with husk is exported only to two districts—Cawnpore and Jhansi.

Bajra, Juar and Makai. This is consumed in Cawnpore district and exported to Bombay and Gujrat.

N.B.—The amount of annual export is estimated to be worth 2 crores and consumption of food grains in Cawnpore city to be worth 50 lakhs.

Marketing system.—Grain is imported into Cawnpore city both by rail from distant places and by bullock carts from places such as Auraiya, Bindki, Kalpi, Unao, Lucknow and Farrukhabad districts. About one lakh carts, each containing 20 maunds of grain on an average, arrive annually in Collectorganj mandi while grain by rail comes to Collectorganj and Nayaganj mandis.

The grain is sold by the biyoparis through arhatias to the local purchasers who pay Re. 1-9 per cent. to the arhatias and the latter pay 4 annas per cent. to the purchaser's brokers leaving only Re. 1-5 per cent. for himself. The arhatias make payment of price to the biyoparis then and there against delivery while the purchasers pay up the price to the arhatias the next day after delivery for which no interest is charged. The commission of Re. 1-5 per cent. realized by the arhatias includes weighment charges at one pice per rupee. The purchaser receives $5\frac{1}{2}$ chattaks per maund of grain in lieu of dirt etc., likely to be found in the grain out of which he keeps 4 chattaks for himself and distributes $1\frac{1}{2}$ chattak to his palledar and weighman.

For the sale of grain received in sacks by rail the following system obtains :—

The arhatia charges Re. 1-9 per cent. from the purchaser and pays out of it 4 annas per cent. as brokerage and 4 annas per cent. (discount) to the biyopari leaving only Re. 1-1 per cent. as arhat charges for himself. In this case the time limit for payment of price is 10 days after delivery for which no interest is charged.

The custom is that a biyopari generally takes in advance 75 per cent. of the price of goods despatched from the arhatia against delivery of railway receipt and the arhatia charges his interest at 10 annas per cent. per month till the grain is sold and account adjusted. The arhatias do not charge godown

rent for one month, but after that they charge a rent ranging between Rs. 2 and Rs. 3 per month for 100 bags of grain.

The purchasing biyoparis of outside places pay 12 annas per cent. to the sellers.

There are about 100 wholesale importers and exporters and 50 dealers who make local purchases for export purposes. These latter are mostly Gujratis, Cutchhis and Rajputana men.

(b) *Statement of the chief crops of the district.*—

Name of produce.	Area in acres.	Estimated yield per acre.
		Mds.
Juar	90,701	8
Bajra	28,760	8
Rice	37,064	14
Cotton	31,472	5
Wheat	83,018	10
Sugarcane	8,763	...
Gram	91,890	11
Peas	19,214	10
Barley	84,009	10
Maize	56,085	8
Indigo	2,777	5
Potato	1,878	39
Wheat mixed with Gram and Barley	59,467	10
Juar with Arhar	110,682	8
Bajra with Arhar	38,933	7

(c) *Flour mills.*—There are at present two big mills—Ganges Flour Mill and Sri Ram Mahadeo Flour Mill—which grind wheat for purposes of export. The Cawnpore Flour Mill has now stopped work on account of a fire that recently broke out in it. Besides the above exporting mills there are about 100 more, all worked by electricity, which do job work charging 6 annas to 8 annas per maund. These grind wheat only.

Daily outturn.—The daily outturn of the above two big exporting mills is estimated to 5,000 maunds and that of the electrically worked small mills 3,000 maunds.

Export.—The outturn of the exporting mills consisting of flour, saji and maida is sent out to Lucknow, Jhansi, Farrukhabad, Bara Banki, Hardoi and Bareilly districts, and the other places in the United Provinces, and sometimes also to Calcutta.

4. Haberdashery.

(1) *Horn combs*.—About 20 families in Bacongaj and Penchbagh are engaged in manufacturing horn combs. Buffalo horns are used. The combs are quite popular in villages.

Process.—The process of manufacturing horn combs is just the same as is followed by Etawah manufacturers. The horns are cut open with a knife and then flattened by heat and application of pressure. After this thin slices are cut by means of a saw and teeth made in each slice.

Organization.—The manufacture of combs is carried on on the lines of a cottage industry and the manufacturers are a set of independent workers using their own material and selling their products.

Marketing system.—The manufacturers sell their products at their own shops. The city dealers purchase their stock and people from the neighbouring villages of Cawnpore district visit the place and make purchases.

Outturn.—The daily outturn of combs is estimated to be 1,000, one man turning out as many as 50 combs. The cost of 1 maund of horn is Rs. 6-8 to Rs. 7 and the combs are sold at the rate of Rs. 4-8 to Rs. 9 per 100. About 400 combs are manufactured out of 1 maund of horn and the shavings are exported to Farrukhabad to be used as manure in potato fields at the rate of Rs. 2 to Rs. 4 a maund.

Estimated profits.—In manufacturing 110 combs the margin of profits roughly calculated is as follows:—

			Rs.	a.
Cost of horn	...	...	1	2
Wages of one workman	...	...	0	13
Miscellaneous charges	...	...	0	8
		Total	2	7
Selling price on an average	...	...	5	8
Savings to manufacturers	...	...	3	1 a day.
Earnings of a workman	...	...	0	13 „

N.B.—The total daily earnings of a family are estimated to be Rs. 2 a day. The work does not go on with uniform speed daily.

Suggestions.—A better process of softening horns by means of an acid bath should be introduced. The tips may be more profitably utilized in making buttons, knives and umbrella handles.

(ii) *Mussel shells.*—Mussel shells are found in quite a large number in the beds of the Ganges and the Jumna, but no attempt has ever been made to use these for button making. There is no trade in the district in fish products, such as fish oil or manure.

5. Hardware.

(a) *Metal utensils.*—Of brass and copper utensils Cawnpore manufactures only a limited number of varieties, such as thalis, katoras, etc. These and many more varieties of utensils manufactured at Mirzapur, Calcutta, Benares, Poona, Rewari, Farrukhabad, Ajmer, Hathras, Sarai Akil (Allahabad district), are to be seen in the Cawnpore market which carries on a fairly large trade in metal utensils. These utensils are made out of (i) new brass and copper sheeting and ingots, and (ii) old, broken and rejected vessels. The ingots are imported from Bombay while brass sheets are obtained from Calcutta and copper sheets from Bombay. The old material is purchased from the following places:—Mirzapur, Gonda, Bahraich, Amritsar, Ludhiana, Rewari, Sitapur and Bara Banki. The old material is invariably utilized in making cast utensils of certain types such as thalis, katoras and "gilmi" thalis the making of which involves the moulding, turning and polishing processes. New material is cut into requisite sizes and beaten into desired shapes. These processes often involve soldering and brazing of cut pieces. All work is done by manual labour. There are about 500 manufacturers of brass and copper utensils spreading over different parts of the city, such as Rawatpur, Railbazar, Colonelganj, Anwarganj, New Chowk and Hiranpurwa.

The export of Cawnpore made utensils is made to Sitapur, Lakhimpur, Bara Banki, Utri-Gushainganj, Fyzabad, Basti, Karachi, Surat, Bombay, Aurangabad, Nagpur, Jubbulpur, Delhi, Rajputana. Batuas are largely exported to Gonda and Bahraich.

Organization.—The actual manufacturers get material from the dealers and manufacture goods for them on contract wages.

Wages—

		Rs.	a.	
Copper utensils—				
Patili	...	12	0	per maund.
Lagan	...	10	0	„
Dishes	...	10	0	„
Thal (sini)	...	10	0	„
Deg	...	14	0	„
Pandan	...	22	0	„
Chilamchi	...	20	0	„
Brass utensils—				
Patili chatkan	...	18	0	„
Patili sakar	...	15	0	„
Patili batua	...	22	8	„

The contract wages which the head factory man gives to his labourers (whenever engaged) are as follows :—

		Rs.	
Copper patili	...	7	per maund.
Lagan, sini, dishes	...	6	„
Deg	...	8	„
Brass patili sakar	...	8	„

Profit to the dealers.—For 42 thalis made out of 1½ maunds of phool metal—

		Rs.	a.
Price of material	...	112	8
Wages to workman at 14 annas per seer	...	52	8
Total		165	0
Selling price	...	172	8
Savings	...	7	8

The selling prices of the articles manufactured here are as follows :—

Copper utensils—

		Rs.	a.	
Patili	...	2	4	per seer.
Lagan	...	2	4	„
Dishes, thals and degs	...	2	4	„
Pandan	...	2	7	„
Chilamchi	...	2	8	„

Brass utensils—

	Rs.	a.
Patili chatkan	1 14 per seer.
Patili sakar	2 0 „

(b) *Iron utensils.*—(i) Iron vessels such as parats, tasla, gagra, tawa and karhais and chulas are made out of iron sheets in fairly large quantities in Cawnpore. Pharwas are also made of this metal. Buckets and trunks are made out of galvanized iron sheets. Dols are made both out of iron and galvanized iron sheets. Iron karhai, tawa and taslas are exported chiefly to Nepalganj, Gorakhpur, Bahraich, Nanpara, Dhampur, Gonda, Bhatni and other places in the United Provinces, but not to the Punjab nor to Bengal. Seventy-five per cent. of iron utensils are exported and the rest are consumed in the city. The trunks, buckets, etc., of galvanized iron are sold mostly in fairs. People living in the villages also purchase these in a fairly good quantity.

There are about 500 to 600 workers engaged in this industry. All these either work in the factories of dealers in iron or work at their respective homes for contractual rates after securing orders and materials from the iron merchants—the family being the unit.

In manufacturing tawas the cost of production and margin of profits are calculated as follows :—One maund sheet iron will give tawas 30 seers in weight and 7 seers cuttings and 3 seers will go towards wastage.

	Rs.	a.	p.
Cost of one maund of iron sheet	7	8 0
Labour charges	2	10 0
Total	...	10	2 0
Price of 30 seers of tawa ready made at Rs. 14 per maund	10	8 0
Add to this the price of 7 seers of cuttings recovered at Rs. 4 a maund	...	0	11 3
Total	...	11	3 3
Deduct cost of material and labour	10	2 0
Savings	...	1	1 3

Profits to the dealer for karhais weighing 30 seers—

	Rs.	a.	p.
Cost of iron one maund	...	7	8 0
Wages	...	2	3 0

Total cost	...	9	11 0
Deduct price of $7\frac{1}{2}$ seers of cuttings at			
Rs. 3 per maund	...	0	9 0

Total net cost	...	9	2 0
Selling price of karhais 30 seers in			
weight at Rs. 16 per maund	...	10	8 0

Net savings	...	1	6 0

Wages.—Wages are generally paid by contract rates as follows :—

	Rs.
Parat	... 5 per maund.
Dol	... 10 „
Tasla	... 5 „

For karhais the wages are paid as follows :—

	Rs.	a.
For cutting the sheet iron		
into small discs	...	0 9 per maund.
Deepening and warming of		
discs	...	0 12 „
Giving shape to the material	1	8 „

For gagra the wages are paid as follows :—

	Rs.	a.
For cutting and deepening	4	0 per maund.
For joining and shaping	5	0 „

Prices.—The selling prices of the different articles are as follows :—

	Rs.	a.
Dol	... 24	0 per maund.
Gagra	... 27	0 „
Tasla	... 18	0 „
Parat	... 20	0 „
Tawa	... 14	0 „
Karhai	... 16	0 „

Buckets of galvanized iron are sold by manufacturers to the dealers at the following rates :—

	Rs.	a.
One dozen buckets having 12 inch diameter	13	0
One dozen buckets having 11 inch diameter	12	0
One dozen buckets having 10 inch diameter	9	0
One dozen buckets having 8 inch diameter	8	0
One dozen buckets having 7 inch diameter	7	0

Marketing system.—There is nothing special about the marketing system. The dealers are mostly retail vendors, excepting a few wholesale merchants who export to different places.

(ii) Iron for building purposes is imported in various thicknesses varying from $1/32''$ to $5/8''$, while for making utensils from $1/8''$ to $3/16''$. Iron chippings are utilized in making parts of different utensils and karchhis.

6. Leather.

Cawnpore, the most important industrial centre in these provinces, has long been famous for its leather products of superior workmanship. In fact it is the foreign trade in hides and skins and the export trade in leather which has secured for it a prominent place among the industrial centres of the country. In 1867 was established the Government Harness and Saddlery Factory which now employs about 2,000 workmen and is designed to meet the demand of the entire army in India. Later on, with the increasing demand for military accoutrements, other private concerns sprang up which gave to Cawnpore the position of importance at present enjoyed by it.

(i) Raw hides and skins.

Cawnpore is a big market for hides and skins, both "deads and slaughtered," and has about 80 firms dealing in them.

Import.—Raw hides (deads or murdaris) are imported in Cawnpore city from Gorakhpur district (Chauri Chaura murdaris or deads command a great sale here), Lakhimpur, Sitapur.

Palia (on Sitapur-Lakhimpur Railway line), Unao district, Shahjahanpur, Moradabad, Bareilly, Fatehpur, Allahabad district (from Bharwari market), Banda, Hamirpur, Makanpur (Araul railway station), Farrukhabad, Bahraich district, including Nanpara, Basti, Gonda and Agra. Nepal hides come via Rupadia in Bahraich district.

“Halali” (slaughtered) hides are received in the city from Rampur, Moradabad, Jullandhar, Lahore, Ambala, Jhansi, Lalitpur, Bhopal, Orai, Bareilly, Bulandshahr, Khurja, Delhi, Muttra, Aligarh, Agra, Hamirpur, Meerut, Muzaffarnagar, Saharanpur and Farrukhabad. Halali hides used to come in large numbers from Saugor, but the import is stopped now.

Hides are exported from the Cawnpore market to Bundelkhand, Agra, Jainur Jodhpur, Gwalior, Aligarh, Muttra, Delhi Riwari, Jullandhar, Fatehpur and Allahabad and to the seaports of Madras and Calcutta, whence they are shipped to foreign countries. A few firms keep their agencies in Calcutta and a few prefer to export direct to Europe, while most sell to exporting European firms of Calcutta. Deads (murdari hides) find a very favourable market in Italy, while slaughtered (halali hides) go to Germany. Buffalo hides and goat skins are exported to America. One firm alone is said to have exported goat skins of the value of \$ 481,340 in 1920-21. Only a portion of the imported hides is purchased locally by the big tanneries of Cawnpore, while another negligible portion is purchased in retail by the mufassil tanners.

Preservation of hides.—Deads are air-dried without any chemical treatment, while slaughtered are either dry-salted or air-dried. Hides from local slaughter-houses are received in wet condition and are smeared with salt and khari before export—occasionally they are arsenicated when required to be retained for a long time.

In Cawnpore city there are two big markets for hides. Both are in Hiramannurwa within the municipal limits of Anwarganj ward. Phoolwali Gali is meant for sale of leather cuttings, country tanned hides and skins, while Panchbagh market is held on Mondays and Fridays where business in country tanned and raw hides (deads) is transacted. At both these markets leather cuttings and “pitwar” (belly) are sold by auction.

The following table gives the average weight and price of a hide and skin :—

Description of hide.	Weight.		Price per maund.	
	lbs.			Rs.
Buffalo hide ..	8 to 32	..	Slaughtered ..	25 to 26
			Deads ..	20
Buffalo calf (katia)	1 to 7	..		16 to 17
<i>N.B.</i> —Calf of three years of age is classed as buffalo.				
Cow hide ..	4 to 16	..	Slaughtered ..	40 to 75
			Deads ..	25 to 26
			Chaura Chauri deads ..	32 to 33
Ox hide ..	20 to 24	..		
Calf hide ..	1 to 3	..		32 to 33
Goat skin—				
Small size ..	1½	..	28" to 29" 1-4 each	} Average Rs. 1-12 each.
			30" to 35" 1-10 "	
			36" to 39" 2-2 "	
Big size ..	2½	..	40" to 56" 2-8 "	

These are sold by measurement and are usually arranged in lots and sold by auction.

N.B.—Calf hide generally fetches higher value as it is light and requires less labour to varnish it. The number of hides per maund is also large.

These are usually arranged in lots and sold by auction.

Season.—The business is very dull during the rains and brisk from October to March.

Means of transport.—Transport is by rail, unless hides are brought by carts from neighbouring districts or by pack animals from the interior of the district (Cawnpore).

Marketing system.—The byoparis either bring their stock personally or send it by rail or carts. The sale is effected through commission agents who charge commission at the rate of Rs. 2 per 20 cow hides and Rs. 2-8 per 20 buffalo hides. Over and above this a seller has to pay 12 annas extra for miscellaneous charges such as Dharam-khata, etc., in each case. In the case of skins a commission of Rs. 2 per 100 skins is charged. The purchasers get a discount of 4 annas to 6 annas per 20 hides from the sellers.

Some 10 years ago, prior to the war, the extent of hide business in the city was about one lakh worth daily. But since the termination of the last Great War this business has considerably gone down and the extent of annual turnover comes to one crore of rupees. The number of hides annually imported into the city is about 20 lakhs and the export is about the same.

After the war some of the foreign countries have stopped going in for Indian hides and some have decreased the amount of their annual import.

This has brought about the reduction of prices in the case of hides and increase in the case of meat.

(ii) *Tanning.*

Tanning is one of the most important industries of the city of Cawnpore. It is done by local country tanners by old indigenous methods as well as in tanneries well equipped with up-to-date machinery. There was a time when a large quantity of tanned hides and skins used to be exported to foreign countries, but later on a change in the character of our export trade from dressed to undressed hides and skins is noticeable. This speaks of the imperfect methods followed by Indian tanners. It may, however, be said that in the leading tanneries in Cawnpore where tanning is done according to up-to-date methods the business has been found to be very profitable.

There are eight tanneries (power) in Cawnpore giving employment to 4,390 persons, on an average, every day. Bark tanning is resorted to everywhere, except at Messrs. Cooper Allen and Company where chrome tanning for their own use is also done.

The tanning of a cow and buffalo hide and a skin takes about four, six and one month respectively.

The daily outturn of all the local tanneries comes to about 2,000 hides.

Raw material—Import.—Bark, lime and acids are all imported. Lime from Mahiar and Katni, acids from England and babul bark at 25 to 30 seers for a rupee from Nepal, Rampur, Unao, Etawah and Cawnpore and other districts of the United Provinces and Sultanpur, Partabgarh, Rae Bareilly and other districts of Oudh. Oil is purchased locally. Bark tanning is the process generally adopted in the Cawnpore tanneries. Babul bark is largely employed together with myrobalans and other tanning materials in varying quantities depending upon the kind of tannage needed. There is still a fairly large field for newer tanning material from neighbouring forests as in the Mirzapur, Banda, Hamirpur and Jhansi districts. The Chhatapur State is said to possess ample resources for a variety of tanning material. In the face of such

immediate and plentiful supply of the most important material for the tanning of hides and skins, the more modern and up-to-date scientific process of chemical tanning, popularly known as "chrome tanning," is not easily finding favour with our hide magnates who, while recognizing the distinct time-saving and other advantages of the new process, also perceive its drawbacks.

Export.—Tanned leather is exported to almost all the districts of these provinces. Bombay, Calcutta, Lahore, Rangoon, Karachi, Amritsar, Jullandhar, Quetta, Baluchistan and Bengal import in small quantities, while Cawnpore-tanned leather finds a very favourable market in Agra.

Tanned leather is sold both by weight and measurement. The prices range between 10 annas and Re. 1-4 a pound for buffalo hide and Re. 1-8 to Rs. 2-4 per pound for cow hide. Chrome leather sells in the market at 8 annas to 12 annas a foot and is imported from Calcutta, Bombay and Madras. Chrome tanning done by Madras tannery is considered to be the best in India.

There are about 50 trained tanners in the city who have either received training in England or in different tanneries such as at Madras, Bombay and Calcutta.

Wages.—The number of country tanners is very large and daily wages of a "rangia" ranges between 8 annas and Rs. 2.

Besides the well-established tanning factories, there is a large number of country tanners in the district who do tanning by indigenous out-of-date methods. Their process of tanning is fully described in Walton's Monograph on Leather Working in the United Provinces. The material which they use is bark, lime, sajji, khari, tilli, oil, tallow, munj and other colouring materials such as myrobalans. The prices of each are given below :—

Lime	...	...	2 annas a seer.
Babul bark	...	...	25 to 30 seers for a rupee.
Sajji	...	...	2 annas a seer.
Khari	...	...	11 seers for a rupee.
Moonj	...	...	Rs. 16 a maund.
Tilli oil	...	...	Re. 1 per seer.
Tallow	...	...	Re. 1 per seer.

The charges for tanning a cow hide, if tanning material is supplied, are Re. 1-4 and for buffalo hide Re. 1-8, while without

material supplied these are Rs. 4 and Rs. 4-4 respectively. For brown polishing Re. 1 extra per hide is charged in each case.

Profits—

			Rs.	a.
Cost of 20 hides	...	...	140	0
Lime, 2½ maunds	...	...	3	0
Babul bark, 10 maunds	...	...	13	4
Sajji, 4 seers	...	...	0	8
Kahri (salt) 11 seers	...	...	1	0
			<hr/>	
Total	...	...	157	12
These 20 hides would sell for	...	...	240	0
			<hr/>	
Profits	...	...	82	4

If brown polishing is required, which is usually done to order, the cost will increase by Rs. 4-8 as below :—

			Rs.	a.
Tilli oil	...	...	1	8
Tallow	...	...	3	0
			<hr/>	
Total	...	...	4	8

N.B.—This, of course, includes interest on capital and expenditure on establishment, etc.

Organization.—A karkhana generally consists of members of one family and all the members work in the karkhana. But outside workman, when engaged, has to be paid at the rate of Rs. 15 to Rs. 20 per month.

Marketing system.—The country tanners sell their hides in the market and especially at Phoolwali Gali and Penchbagh (both in Hiranpurwa) which are the important centres for hide business in the city. The village tanners also manage to clear off their stock on local bazar days or they move about to neighbouring bazars on market days.

(iii) Manufacture of boots and shoes.

Out of the 10,000 leather workers in the district, no less than 6,000 Muhammadans and Chamars follow the occupation of manufacturing boots and shoes. Boots and shoes of two

different qualities are manufactured. Those of superior quality are hand-sewn. Their prices range between Rs. 10 and Rs. 16 per pair and their daily outturn comes to very near 1,000. The outturn of shoes classed as inferior comes to about 1,500 pairs per day and their selling prices are something between Rs. 4-8 and Rs. 9 per pair.

An ordinary worker is expected to manufacture one pair of shoes in one and a half days, while a smart man turns out a pair a day.

Mostly leather tanned in local tanneries is used—only 10 per cent. is imported from England and America. Thread, eyelets, screws, nails, iron tacks, laces, sole-polish and needles are all imported from foreign countries. The monthly import of raw material, including leather, is estimated to be worth Rs. 45,000. The following table shows the monthly export of boots and shoes :—

Place of export.	Estimated value of export. Rs.	Remarks.
Bengal, chiefly Calcutta, Dacca and Assam.	20,000	Mostly second quality boots and shoes.
Punjab, chiefly Dehli, Lahore and Peshawar, and thence to Kabul.	10,000	Mostly first quality boots and shoes.
Burma, chiefly Rangoon, Mandlay and Moulmien.	15,000	Mostly first quality boots and shoes.
Other districts of the United Provinces.	5,000	
Total	50,000	

Wages are chiefly paid by contract system, but in some cases monthly payment system is also in vogue. Piece wages are :—

	Rs.	a.	p.	Rs.	a.	p.		
(a) Upper cutting	...	0	5	0	to	0	6	0 per piece.
(b) Lasting	...	0	3	0	„	0	4	0 „
(c) Sole-stitching	...	0	10	0	„	0	12	0 „
(d) Finishing	...	0	1	6	„	0	2	0 „
(e) Sole-polishing	...	0	3	0	„	0	4	0 „

Wages by time range between Rs. 10 and Rs. 50 per mensem according to the qualifications of the workman.

Marketing system.—Illustrated catalogues are issued and travelling agents employed by most of the firms. Orders are as a rule received direct by the exporting firms which buy boots and shoes, chiefly of the second quality manufactured by the cottage workers.

Munda and Gurgabi shoes are also manufactured and exported to different places in Bengal (chiefly Calcutta), Dacca and Assam. Their average daily outturn is about 3,000 pairs and the prices are Re. 1-8 to Rs. 3 per pair.

(iv) *Manufacture of saddlery.*

Two to three thousand workers are engaged in this branch. Their monthly output is about 1,000 saddles. Saddles of three different varieties are manufactured :—

(a) Officers' saddlery.

(b) Sowars' saddlery.

(c) Light saddlery.

(a) This is purchased mostly by Government officials and the Government Harness and Saddlery Factory has often to indent on the local firms in order to meet the full demand on their own factory. A complete official saddle would sell for Rs. 80 to Rs. 125. They are largely exported to the Punjab and probably find a way to Kabul ultimately.

(b) Sowars' saddles find a good market in the Native States and Government Military departments. Their prices range between Rs. 70 and Rs. 100 each.

(c) Light saddles are especially suited for games such as polo, hunting, racing. Racing clubs are the principal importers of such saddles which are principally exported to Burma and Assam. Prices range between Rs. 75 and Rs. 100 each. The total export of saddlery is estimated to be Rs. 8,000 to Rs. 10,000 worth per month.

Wages are paid by contract, the rates being Rs. 5 to Rs. 10 per complete saddle. Firms, as a rule, supply their own material. These are manufactured by a special class of workers who give themselves out as "Srivastavas."

I am told that for the last two years or so no foreign made saddleries have been imported as the locally manufactured stock is quite sufficient and has been selling very well. This shows

that foreign goods are being successfully replaced by local goods.

(v) *Manufacture of harness.*

About 2,000 workers are engaged in the manufacture of harness. The Native States, Burma, Bengal and the United Provinces are the chief purchasers. Hindu Mochis and Muhammadans are the chief workmen. A workman takes six days to make one harness which would sell for Rs. 20 or Rs. 30 to Rs. 100. The total monthly outturn is estimated to be a little above 400 pieces of complete harness.

Wages.—Wages are paid by contract system, these being Rs. 5-8 to Rs. 12 per complete harness. The dealers generally supply their own material. But some cottage workers use their own material and sell, to dealers, harnesses of inferior quality for Rs. 16, Rs. 17 and Rs. 24. These cottage workers, with the help of their females, make a harness in two or three days and earn about Rs. 6 or Rs. 7 per harness. The earnings of a family thus come to Rs. 2 or a little more per day.

(vi) *Manufacture of handbags, suit cases and cabin trunks.*

About 4,000 workmen are engaged in the manufacture of these articles.

Handbags.—These are mostly exported to different districts in the United Provinces, Calcutta, Bombay and Burma. Their prices range between Rs. 8 and Rs. 25. Very few dealers sell these by inches, but if sold by inches the selling rates are 10 annas to Re. 1-8 per inch.

Wages.—Wages are paid at the rate of 1 anna 6 pies to 2 annas per inch.

Profits (Handbag, size 16 inches)—

	Rs.	a.
Cardboard	...	0 12
Leather	...	5 0
Frame at 2 annas 6 pies per inch	...	2 4
Lining	...	1 0
Labour	...	2 0
	Total	11 0
Selling price at Re. 1 per inch	...	16 0
Savings to dealer	...	5 0

Suit cases.—These are extensively exported to Calcutta, Bombay and Lahore. These sell for Rs. 25 to Rs. 75 according to size, and the selling rates per inch are Re. 1-4 to Rs. 2 relative to design and finish.

Wages.—For the manufacture of suit cases wages are paid at the rate of Rs. 3 to Rs. 6 per suit case.

Profits (Suit case, size 26" × 16")—

	Rs.	a.
Leather (one cow hide complete) ...	12	0
Two locks	2	0
Buttons	0	8
Rivets	1	4
Lining (drill, khaki 1½ yards) ...	1	8
Three cardboards at Rs. 16 a pound ...	1	2
Frame at 1 anna per inch ...	1	10
Labour (contract system at 3 annas per inch followed by some firm) ...	4	14
	<hr/>	
Total ...	24	14
Selling price	32	8
	<hr/>	
Savings	7	10
	<hr/>	

It generally takes one workman three days to make a suit case.

Cabin trunks.—These are exported chiefly to Calcutta and Bombay and purchased mostly by travellers going outside India at prices ranging between Rs. 40 and Rs. 100.

Wages.—The wages for manufacturing a cabin trunk range between Rs. 4 and Rs. 7 per trunk.

N.B.—For manufacturing these articles a workman earns between 12 annas to Rs. 3 per day, and a dealer makes a profit of Rs. 2 to Rs. 15. Where a workman uses his own material he has to borrow money for its purchase which he usually gets on interest at 1 anna per rupee. Some times a higher rate is also charged.

Suggestions for improvement.—Organization on co-operative lines will certainly help the cottage workers in producing articles and disposing them off quickly.

7. Miscellaneous.

(a) *Cardboard boxes for medicinal phials and soaps etc.*

There are three factories in Cawnpore which turn out cardboard boxes for phials and soaps. The one is known as Khanna Box

Factory, the other Bewarwal Company and the third is Messrs. L. B. Varma and Company. Of these the last named (Messrs. L. B. Varma and Company) appears to be most important. This factory is fitted with three box-making machines in which dies of various sizes are fixed and a little pressure from above gives shape to the boxes of different sizes corresponding to the size of the die fixed on it.

The daily output (the day is generally of eight hours in this factory) of all the three machines is about 12,000 boxes.

The import of white and coloured cardboard for boxes is made direct from England, Germany, Holland and Japan, and the export of finished articles is made to Burma, Ceylon, Ahmedabad, Hyderabad Deccan, Calcutta, Bangalore and different places in the Punjab. The sale is made chiefly to dealers in hair oils and soaps and manufacturers of patent medicines, cigarettes and tea.

The price of a box depends on its size and the quality of the cardboard used in it. Ordinarily the prices are fixed per thousand and these range between Rs. 10 and Rs. 100. Glazed cardboard boxes for soaps like Sunlight, etc., are also made but not ordinarily. Such boxes are always made to order.

The chips of the cardboard are usually sold to paper mills at Lucknow at Re. 1-8 per maund. Messrs. L. B. Varma's factory gives employment to about 35 hands.

Messrs. L. B. Varma and Company are said to be selling machines also of their own manufacture, for cutting and stamping soaps, the former at a price of Rs. 125 and the latter in three qualities for Rs. 125, Rs. 275 and Rs. 325 respectively.

(b) *Cane furniture.*

There are about 50 to 60 cane weavers in the city. Most of them live in Coolie Bazar and make cane furniture to order. Chairs, tables, setties and other cane furniture of ordinary designs are made. Prices of chairs range from Rs. 6 to Rs. 10 and those of tables from Rs. 3 to Rs. 6. Cane is imported from Pilibhit, Bareilly, Gonda, Gorakhpur and Nepal at 2 seers for a rupee. Malacca cane is imported in a very small quantity from Bombay, Calcutta and from the wholesale dealer Salig Ram of Lucknow at the rate of Rs. 2 a seer.

Time occupied in making cane furniture depends upon the workmanship of the articles turned out. Ordinarily a workman takes three to six days to make a chair and a table.

Besides the cane furniture these people also make bamboo chairs.

A workman is said to earn Rs. 2 a day, but his monthly average income is estimated to be between Rs. 30 and Rs. 40.

The furniture is generally made to order with the exception of a few articles and is all sold locally.

(c) *The Indian Distillery, Cawnpore.*

The Indian distillery, which commenced work in Cawnpore in 1913, is owned by Lala Banke Bihari Lal, Banker and Mill-owner, Cawnpore. This is one of the three distilleries in India which work upon the "Hansen Pure Yeast culture system" and probably the only one which manufactures a synthetic spirit. This must not be confounded with the ordinary sophisticated whisky and brandy produced from cheap Java or German spirit.

Machinery.—The factory is provided with three patent stills of a capacity of 50,000 to 60,000 4 L. P. gallons monthly and the boiler is of 60—70 H. P.

Labour and wages.—The distillery employs about 150 hands working on eight hours shifts, as when once the operations are commenced the work goes on night and day.

Payment.—Payments are made by time.

Raw material—Import.—The raw material required for the distillery consists of mahua, molasses and general stores such as capsules, corks, essences, etc. About 50,000 maunds of mahua is annually required for the distillery and is imported from different districts in the United Provinces and Central India and about 50,000 maunds of molasses is annually got from the proprietors own sugar factory at Anwarganj, while general stores are mostly India-made except capsules, corks and essences which are imported from England.

Export of finished products.—The distillery produces whisky, brandy, rum and gin synthetically besides rectified and methylated spirits. The plant has a capacity of about 600,000 4 L. P. gallons of spirits and liquor, but due to reduced consumption about 180,000 4 L. P. gallons annually only are

distilled. The distillery is the largest Government supplier in these provinces for country spirits.

It holds a contract for the exclusive supply to 21 districts in these provinces. The Government estimated the annual consumption of these districts to be approximately 240,000 L. P. gallons, but due to the effect of the activities of the non-co-operation movement and that of the war on business in general the consumption for the past two years has been only 120,000 L. P. gallons.

Remarks.—Originally this distillery was started with a capital of Rs. 1,50,000 and in view of a large business through Government contracts, the capital was increased to approximately Rs. 7,00,000 in the course of six years. The Excise Commissioner and the Local Government realizing the great pecuniary difficulties of the distillers granted them rebates under provincial Government contracts. But in spite of this help and increased contract rates it is said that the distillery has not been able to make any appreciable profits. The concern is over-capitalized for an output of 120,000 gallons annually. It has been very strongly suggested to me that the existing excise rules all over India be altered to allow spirits to be exported from one province to another after duty has been paid at the place of manufacture in the same manner as cheap German, Austrian, French, English and Java spirits are retailed all over the country after duty has been paid at the ports. At present the spirits manufactured in the country are prohibited from entering Bombay, Punjab and Bengal by the Government of those provinces unless these are stored in bonded warehouses. For this purpose an All-India legislature will be necessary.

Marketing system.—Foreign methylated and rectified spirits are sold by advertisement in most of the leading papers all over India while the sale of country spirits is restricted to Government contracts.

(d) *Electricity.*

The Cawnpore Electric Supply Corporation, Limited, managed by Messrs. Begg Sutherland and Company, supplies electricity to the town of Cawnpore for domestic purposes and to a certain extent for industrial purposes. Tramcars are also run with electric power from Sarsaya-ghat to the East Indian

Railway and Oudh and Rohilkhand Railway Stations—a distance of 3 miles. The company has lately erected a second power house and shortly proposes to supply electricity to such big mills as the Lalimli and the Elgin Mills. It is subsidized by the local municipality, the agreement being that the company shall supply and municipality shall pay for as much electricity as the municipality shall require subject to an annual average minimum consumption of 1,000 units per H. P. of all motors installed under the agreement and should the consumption per H. P. of motors not reach that minimum the municipality shall pay to the company for such shortage.

Charges—

- (1) Eight annas per unit are the charges for domestic purposes. A rebate of $12\frac{1}{2}$ per cent. is allowed for paying within 15 days of the date of the bill.
- (2) Rupee 1 per kilowatt is charged according to the capacity of the meter.
- (3) Meter hire is Re. 1 per month.
- (4) Lighting (monthly) charges—
 - Rupees 5 per month per 40 Watt lamp.
 - Rupees 7 per month per 60 Watt lamp.
- (5) Motor of not less than 5 H. P. and not more than 30 H. P.—
 - For the first 90 units per H. P. per month, 2 annas 6 pies per unit.
 - For such energy as is consumed in excess of 90 per H. P., 1 anna 3 pies per unit.
- Motor of not less than $\frac{1}{2}$ H. P. and not more than 5 H. P.—
 - For the first 120 units per H. P. per month, 3 annas 6 pies per unit.
 - For all energy in excess of this amount, 1 anna 6 pies per unit.
- (6) Heating and cooking charges—2 annas 6 pies per unit.

The rates for big and small concerns are uniform. I am told that the flour mills do not find electricity cheaper than the oil engines.

(c) *Forest.*

(i) *Afforestation in Cawnpore district.*—At present there is only a small area of 350 acres of Reserved Forest in Cawnpore, known as the Alambagh, situated just beyond the Agricultural College. Another block near Juhi is being acquired from the Agricultural department very shortly. The Alambagh was a barren waste when taken over by the Forest department in 1914 and was inclined to be usar and slightly ravine country. However, by treating it in the way found very suitable in the ravines of the Etawah district it has been converted into perhaps one of the finest Forest plantations in India. The value of a forest close to a big town like Cawnpore can very easily be seen from the annual return realized from the Alambagh. Its value is all the more enhanced when one finds that so far only a certain amount of suppressed growth and the grass on the area is annually cut out. The annual yield comes to about Rs. 3,000 or roughly about Rs. 8 per acre (the annual expenses being about Rs. 200 a year). There is a lake in the centre, formed by a ravine being bunded up. The species of trees sown on the area are sissoo (*Dalbergia Sissoo*), babul (*Acacia Arabica*) and *Gmelina Arborea*.

(ii) *Firewood.*—The existence of a very large Indian population in Cawnpore has resulted in the enormous consumption of fuel wood in the city. Babul and dhak wood is chiefly used as fuel. Cawnpore is connected with various railways and having its situation on the bank of the Ganges it affords innumerable facilities in the matter of transport of this important article of human consumption.

More than 5,000 wagons, each containing about 150 maunds of fuel wood and about 300 boats each having 800 to 1,000 maunds of fuel wood, are received every year in Cawnpore. These land at Permitghat, etc.

Fuel wood is received in the city from the following places:—

Railway lines.	Places.
E. I. Ry.	Bhaopur, Mytha, Rura, Ambiyapur, Jh̄njak, Kanchausi, Phapoond, Achhaldā.

Railway lines.	Places.
G. I. P. Ry. ...	District Jālaun, Cawnpore, Jhansi, Lalpur, Pukhrayan, Panwan, Malasa, Kalpi and Chaura.
O. & R. Ry. ...	Takiya, Dalmau, Debi, Jalalpur, district Unao, Rae Bareli, Bighapur, Uncharhar, Lalganj, Jais, Malihabad and Rahimabad.
B. & N.-W. Ry. ...	Mailani, district Lakhimpur, Dudhna, Sunaripur, Chandan Chouki, Maulaha, Balia and Bilrayan.

Just a few months back fuel wood used to sell for Rs. 90 to Rs. 100 per 100 maunds, but now the prices have gone down to Rs. 65, Rs. 70 and Rs. 75 per 100 maunds.

Dhak jungles are taken by the dealers from zamindars on payment of a royalty of Rs. 200 per jungle which is expected to yield 16 wagon load of fuel—each wagon containing about 125 maunds.

(f) *Glue manufacture.*

There is no organized factory in Cawnpore for the manufacture of glue. The manufacture is carried on the cottage industry basis. Desolil and Company and Messrs. M. Gupta and Company are the principal exporters.

Glue is used chiefly for printers' rollers, book-binding and joinery work in fancy furniture and is imported chiefly from France, Austria and England. Small leather chips, which cannot be used for the manufacture of any leather goods, are melted and boiled with other refuse of the slaughter-houses to a syrupy consistency and then mixed up with other chemicals. The liquid is then drained off in another vessel and cut into small pieces after it has coagulated.

The raw material for the manufacture of glue is purchased locally and glue is exported to Bombay, Calcutta and Madras. The estimate of annual production of glue is 1,500 maunds.

Cawnpore is a big centre for manufacturing leather goods. About 2,000 hides are estimated to be tanned daily in local tanneries and are used in manufacturing leather goods of all description. This accounts for the abundance of leather cuttings in the district. The absence of a well-organized glue

factory is felt, and if any educated man takes up the manufacture of glue in this district, there are chances of his success.

(g) *Jail industries.*

(1) *Moonj matting—*

Number of prisoners engaged daily in weaving	20
Number of prisoners engaged daily in preliminary processes	... .. 70

Monthly outturn.—Forty mats, including bedding of prisoners. The size of each mat is 16' × 16'. The total monthly outturn is 1,100 square yards.

Raw material used.—Moonj 600 maunds, obtained from Mohan Lal Jwala Prasad, Kasganj (Etah) at Rs. 3-8 per maund.

Price of mats.—Rupee 1 to Rs. 2 per square yard.

General remarks.—In Cawnpore moonj mats are made only in the District Jail, which supplies them to private persons and to Government officers. One prisoner weaves about 8' × 3' in a day of nine hours, and 3 maunds of moonj is consumed in weaving a mat 16' × 16'. The labour charges of each prisoner in jail are calculated at the rate of 3 annas 3 pies per day.

(2) *Durries, carpets and niwar—*

Number of prisoners engaged	... .. 50
Annual outturn of durries	... .. 300
Annual outturn of carpets	... .. 220
Annual outturn of niwar	... .. 20 mds.

Raw material used.—500 bundles of cotton yarn of 10 pounds each at Rs. 7-10 per bundle obtained from Tulshidas Tejpal of Hathras.

Ordinary size of a carpet 7' × 4' weighing 7½ seers.

Ordinary size of a durrie 7' × 4' weighing 3 seers.

<i>Prices.</i> —Durries	... .. Rs. 3 to Rs. 5 per square yard.
Carpets	... .. Rs. 3 to Rs. 5 per seer.
Niwar	... .. Rs. 2-8 per seer.

Value of annual outturn of durries and carpets.—
Rupees 8,000.

General remarks.—One prisoner weaves durrie 2' × 2' and " qálin " 2' × 6" in a day of nine hours. The manufacture of each is taken up alternately. The carpets are artistic and sold mostly to Indians. Durries of large sizes are mostly purchased by Europeans and of small sizes by Indians.

(3) *Woollen blankets*—

Number of prisoners, including spinners
and carders 45

Annual outturn.—Two thousand seven hundred blankets weighing 236 maunds 2 seers.

Raw material.—Wool is purchased from Lala Jhabbulal, a local contractor, and from Kanhaiyalal Sita Ram of Agra. The total purchase comes to 250 maunds at Rs. 27 per maund.

Prices of blankets.—Rupees 4-4 to Rs. 5-8 per blanket. Black, coarse and check blankets are made.

Sale of blankets.—These are used by the inmates of the jail and are purchased by the people visiting the jail. They are also sold to the public. One thousand five hundred blankets were supplied to the police lock-ups in the United Provinces this year.

General remarks.—Blankets are made on a loom 5½ feet wide. Each blanket is 160 feet in length and is cut into smaller ones of 10 feet each. When washed and kneaded it shrinks to 7 feet. The new kind of bobbin and shuttle invented by Colonel Clement of Lucknow Jail which takes much more woollen yarn, is used. The condemned woollen material is utilized for manufacturing " asnis " which sell at Rs. 2-8 each.

(4) *Dusuti and dusters.*—These are woven for the use of the jail inmates.

Number of prisoners engaged—7.

Annual outturn.—8,832 yards.

Raw material used.—45 maunds of yarn of count 10½ is consumed and is obtained from Messrs. Tejpal Tulshj Das of Hathras.

Prices.—Rupees 23 per *than* of 46 yards. The value of annual outturn comes to Rs. 4,416. Dusters are sold to Government offices at prices ranging between 8 annas and Re. 1 each.

(5) *Chicks.*—The manufacture of door chicks is also undertaken by the jail. Chicks of the annual value of Rs. 1,000 are turned out. These are made to order and not stocked. The charges are $3\frac{1}{2}$ annas per square foot. Three prisoners are on an average kept engaged for this work.

(6) *Oil.*—There are two kolhus for expressing sarson oil. The daily outturn is 12 seers of oil out of 36 seers of sarson. The oil is consumed by the jail inmates and cake is used as fodder for the jail bullocks and as sizing material for the manufacture of blankets. The sizing material consists of mustard cakes and powdered “guar” seeds.

✓ *Suggestions for specialization of industry in this Jail.*—This jail is especially suited for weaving blankets, carpets and durries and cloth. The jail inmates are mostly of the weaving class and most of them are such as have learnt work in the local mills. The number of inmates of this jail is about 600 of whom 200 are engaged in industrial section. There should be a special officer for all jails in these provinces to supervise jail industries. After their release the convicts do not follow the profession they learn in jail.

(h) *Khajur (date) mattings.*

There are about 13 to 14 families living in Chatai Mohal who are engaged in the manufacture of khajur matting and fans. Women as a rule help in the manufacturing of fans and mattings.

The date leaves are available in Cawnpore as well as in the Unao district. The cottage workers visit the places having date groves in parties of six or seven and bring leaves paying Rs. 5 to Rs. 25 to the zamindar as a royalty for cutting down leaves once or twice a year. There are several persons living in muhalla Deputy-ka-Parao, Cawnpore, who too sell leaves at the rate of Rs. 2-4 per “gatha” containing 250 stalks. A patti is generally 42 yards by $2\frac{1}{4}$ inches which a workman can turn out in a day. The leaves are used in weaving mat and stalk as fuel.

The savings in a patti measuring 42 yards by 2½ inches are estimated to be as follows:—

			Rs.	a.
Khajur	0 1
Selling price	0 8
Savings	0 7

In matting a room 20' × 20' the margin of profits are roughly calculated to be as follows:—

			Rs.
Cost of matting
Charges for matting at Rs. 2-8 per 100 square feet
Earnings of a workmen in one and a half day

Allahabad and Hamirpur people purchase chatai from Cawnpore, otherwise the consumption is all local.

In this business the daily earnings of a family are estimated to be Re. 1-5 to Re. 1-8 a day.

Import.—Khajur mats and fans and “jharu” (brooms) are made of date leaves.

Places of import.—Ferozepur, Maletha near Ajgain and Nilehra in Unao district and Bani in Cawnpore district. All the 12 persons who manufacture these articles and whose names are given in Chapter V.—“Directory” get date leaves from Cawnpore district. These people go to Bani in Cawnpore district in parties of seven or eight where they get groves from zamindars on payment of a royalty of Rs. 5 for cutting date leaves once or twice a year. These people stay there for a week and cut the leaves and bring these on carts paying 6 annas per gatha. One gatha contains 250 stalks. At a time 40 to 50 gathas in all are brought on carts to Cawnpore.

(i) *Kites and yarn for kite-flying.*

Kite flying has been an amusement of the people from old Nawabi days and still kite making gives employment to about 20 families. There are about 50 persons engaged in this work. Kites of various designs are made. Ordinary paper kites sell

at 2 to 3 pice each, while kites having gold and silver figures of fish, parrot, horse and flowers painted on them with brush sell at 6 annas each and are made at the rate of two kites per day.

White "tash" yarn is used as string for kite flying. The yarn, both imported and mill-made, is warped at first and then spiced with one chatak of powdered glass mixed with one pao of well-cooked rice are rubbed on the yarn. Soap and colouring material are also added to the preparation. Shanjarf or "Isapghol ki bhusi" is also added in order to make the "manjha" smooth.

The string is made into balls and sold to kite merchants.

(j) *Lens-making for spectacles.*

Messrs. Rohatgi Brothers make lenses out of pebble or crystal glass. They import plain glasses as well as partly focussed lenses. Grinding, finishing, polishing and edging is done by means of hand tools by the firm. Slices are at first cut out by means of a steel wire strung to a bow and then rubbed to different curvatures. Corandum stone (powdered), which is imported here from Lucknow, is used in grinding the lens. "Bari" (burnt "aqiq," which is a kind of stone) is used for polishing a lens when it gets blurred. The powder is spread like a paste on a leather strop. The firm manufactures spherical and kryptok lenses (bifocal) as well.

No skilled workmen are available in Cawnpore. Two workmen, who work in this factory, have been imported from Lucknow, one gets Rs. 50 a month plus bonus and the other Rs. 25 a month. This retards expansion of the industry and timely execution of orders. Business is generally local—a few orders have been received this year from Benares, Etawah, Fatehpur, and Unao.

The introduction of machinery for grinding pebbles will economize time and ensure quicker execution of orders. The annual outturn of this firm is about 700 pairs. The prices of spectacles are Rs. 6 and upwards per pair.

(k) *Moonj mondhas.*

About half a dozen families in Mondha Bazar are engaged in making moonj mondhas. The raw material comes from the neighbouring villages and bought locally by these cottage workers at Re. 1 to Rs. 2 per "pola" according to weight.

Eight small mondhas are made out of one pola of moonj and sold at the rate of 8 annas each. The big ones go for Re. 1 each.

A man can make three small or two big mondhas in a day and earn about Re. 1 or Re. 1-2 per day. These cottage workers also do the weaving of moonj charpoys.

(1) *Hollow wares and tin works.*

One firm in Cawnpore manufactures tin boxes of various sizes and jointless "dibiyas" and double seamed jointed tin cans. Besides getting land cheap, some monetary help to the extent of Rs. 5,000 has now been recommended for the firm by the Industries department. The work of this factory goes on with the help of hand machinery and the plant consists of screw presses, treadle cutting sheers, circle cutting machines and screw cutting lathes, etc.

The boxes and dibiyas are bought by tobaccoists and are extensively used in medical halls and by vaidis and chemists for keeping ointments and other similar medicines.

Raw material—Import.—Tin sheets are purchased locally and are some times ordered direct from Calcutta. The annual consumption is estimated to be of the value of Rs. 1,600; "ranga" (lead) of the value of Rs. 50 is also imported from outside the district.

Export.—The annual outturn of the factory is estimated to be a little above Rs. 3,000 worth. The finished articles are exported to Allahabad, Lucknow, Benares, Lahore, Amritsar, Mirzapur, Farrukhabad, Kanauj, Moradabad, Garhwal, Etawah, Narsinghpur (Central Provinces), Ballia, Bareilly, Agra, Saharanpur, Mangalore, Rawalpindi and Poona.

The factory's progress is alleged to have been suspended on account of financial stringency, for which Government help has been solicited.

Prices.—The prices of tin boxes and jointless small "dibiyas" range between Re. 1-12 and Rs. 13-8 per gross, while those of jointed double seamed tins between Rs. 3 and Rs. 75 per hundred.

Labour.—The factory gives employment to one plate-cutter on Rs. 25 per mensem and three labourers for working hand screw presses on Rs. 15 each.

Profits.—The profit in this business is estimated to be between 15 and 20 per cent.

The "tin" sheets purchased locally cost Rs. 23 to Rs. 24 per case containing 112 sheets 14" × 20" each. If these are imported from Bombay or Karachi, the cost per case comes to about Rs. 20 (delivered on the spot) and if received direct from England, the cost per case actually delivered on the spot does not exceed Rs. 17.

Marketing system.—Advertisement in papers is resorted to but no travelling agents are employed.

Suggestions for improvement.—In this factory, the chip-pings are thrown away which can profitably be utilized in making buttons. This firm also occasionally makes brass dishes with the help of machinery, but cannot produce them on commercial scale on account of financial difficulties.

(m) *Manufacture of tin-covered chir boxes.*

There are eight persons in Hatia and Generalganj who carry on the manufacture of "deodar or chir" boxes with tin covering.

Packing cases are purchased locally from cloth merchants at prices varying from Rs. 2 to Rs. 3.4 per case; cases with tin lining always fetch a higher value. Tin sheets measuring 20" × 14" are available locally at a cost of Rs. 28 per 112 sheets. Iron blocks for engraving on the tin sheets are purchased locally at Rs. 4 per seer. The price used to be Re. 1.4 a seer formerly. Figures of peacocks, fish and other birds, etc., are stamped on the tin coverings with the aid of the iron blocks which are made locally.

The sale is mostly local. Village people from Cawnpore and Fatehpur districts who visit the city often purchase such boxes, which command an extensive sale in Makanpore and Madaran fares as well and in Magh Mela of Allahabad. The total daily sale of such boxes comes to a little above Rs. 200 worth.

The manufacture goes on all the year round but the work is slack during the rains.

Process.—Four tin sheets, one above the other, are placed on a wooden plank and the figures of different birds and animals stamped on all four at one and the same time with the help of iron blocks.

Wages—

Workmen who do the stamping and covering up of the boxes 10 annas a day.

Carpenters 12 to 14 annas a day.

Carpenters are paid contract wages also according to the size of the box and they receive advances up to a limit of Rs. 100. The daily outturn of a carpenter on an average is four to five boxes.

Contract wages to carpenters are as follows:—

	Rs. a.
Box 21 inches to 2 feet in size ...	0 3 a box.
„ 2½ feet in size ...	0 4 „
„ 3 feet in size ...	0 6 „

A box 3 feet in length, the price of which is generally Rs. 4-12, can be made out of a packing case costing Rs. 3. One imprinted tin sheet is used for the front and the tin lining purchased along with the packing case is used in the sides.

The margin of profits per box is estimated to be 8 to 14 annas.

(n) *Umbrella Manufacturing Company, Badshahinaka, Cawnpore.*

Umbrellas are manufactured in Cawnpore by the United Provinces Umbrella Manufacturing Company, a swadeshi concern started only four months ago. The company gives employment to 10 hands consisting of tailors and others whose monthly pay ranges between Rs. 40 and Rs. 50.

Raw material—Import.—Wire and narkul handles are imported from Calcutta and cloth such as khaddar and twill is purchased locally. Umbrellas are durable and have cane and iron frames. The umbrellas are of different sizes and have 8 to 16 ribs. Their prices range between Re. 1-4 and Rs. 3-12.

Manufacture.—The daily outturn of the factory comes to 12 dozen umbrellas which are exported for sale to different agencies in Bihar, Punjab, Central Provinces, Jaunpur, Lucknow, Unao, Gorakhpur, Bhagalpur, Patna, Buxar and Gaya.

Margin of profits.—In making an umbrella having eight ribs, the margin of profits is estimated to be as follows :—

		Rs. a.
Cost of rib-making	...	1 0
Wire	...	0 4
Handle and brass pieces	...	0 4
Cloth for covering	...	1 4
Total cost		2 12
Selling price of an umbrella	...	3 0
Savings per umbrella		0 4
English-made tilis	...	0 6
Bamboo handle	...	0 2
Brass piece	...	0 4
Miscellaneous	...	0 2
Khaddar covering	...	0 12
Total		1 10
Selling price	...	2 0
Saving		0 6

8. Oils.

In India the use of oil as an article of diet is very important.

(A) *Power mills.*

Cawnpore city possesses eight or nine well-organized oil mills, a directory of which is given in Chapter V of this book.

Outturn of oil and consumption of raw material.—The annual consumption of oilseeds in all these mills and by "telis" comes to a little above 1,500,000 maunds with an annual estimated yield of about 500,000 maunds of oil—there being approximately 700 mill kolhus, 20 presses and 500 bullock-driven kolhus.

Import of raw material.—Til, linseed, mohwa seed, mustard seed, castor seed, poppy seed and rape seed are imported from all over the provinces, Ramnagar, Haldwani, Tulshipur, Balrampur, Nepalganj in Bahraich district, Nanpara, Gonda,

Colonelganj in Gonda district, Bahramghat, Fyzabad, Sultanpur, Amethi and Etawah district. The mills usually purchase oilseeds locally with the exception of one or two which import them direct also, from Sultanpur, Amethi and Etawah.

Export.—Oil is exported to Bengal, Dumraon, Arrah, Buxar, Sahasraon (in Bihar), Burdwan and Champaran districts. Mohwa oil finds a good market in the Punjab and many places of the United Provinces where it is utilized in the manufacture of soaps. Recently mills have started using mohwa oil as a lubricant. Castor cake is exported to Darjeeling where it is used as manure in tea plantation and also to the Punjab, Champaran and Gorakhpur districts as manure for sugarcane. It is also exported to foreign countries for manuring purposes, the chief exporters being Messrs. Graham and Company, Calcutta, D. Waldie and Company, Calcutta, Allen Brothers and Company, Calcutta, Gladstone Wyllie and Company, Calcutta, Turner Morrison and Company, Calcutta, Stoll Earl and Company, Calcutta, Shaw Wallace and Company, Calcutta, Rowntree Mackenzie and Company, Limited, Poona, and Anderson Wright and Company, Calcutta. Rape seed and linseed cakes are exported for animal consumption chiefly to the Punjab. Mohwa cake is chiefly used as fuel and very seldom as manure. The writer is informed that it is exported in bulk to Japan.

Castor oil is purchased by different railways, presses and ginning mills for lubricating purposes. Bulk of mustard oil goes to Bengal and cake to the Punjab. Linseed oil is used chiefly by leather manufacturers and the cake is sent to the Punjab.

Prices of oil and cakes—

		Rs.	a.	
Oil—				
Castor	...	18	0	per maund.
Linseed	...	25	0 to 30 0	„
Mohwa	...	20	0	„
Rape or sarson	...	22	0	„
Cakes—				
Linseed	...	5	0	„
Mohwa	...	0	14	„
Sarson	...	3	4	„
Castor	...	3	8	„

Percentage of oil expressed.—Mohwa seed, linseed, castor seed and tilli all yield about 40 per cent. of oil, while sarson gives about 33 per cent.

Labour.—All the mills in Cawnpore give employment to about 600 hands. The following are the statistics :—

Designation.	Chief duty.	Rate of monthly pay.
		Rs.
Kolhus—		
Linedars ..	Supervise the working of kolhus	24 to 30 per mensem
Palledars ..	Put seeds into kolhus for being crushed; do other things connected with it, e.g., removing cakes and general cleaning of kolhus and the place	16
Mistris ..	Cut the kolhus	45 to 50
Mochis ..	Look after the beltings	18
Oilmen ..	Oil the shaft	15
Blacksmith ..	.. ..	35 to 40
Hammerman ..	.. ..	16
Carpenters ..	.. ..	25 to 40
Turners ..	Repair the machine	50
Fitters ..	Look after the iron parts of the machine.	35 to 40
Engine department—		
Second class engineer.	Attends to the boiler and engine	100 to 175
Driver (first class)	Ditto	25 to 30
Oilmen ..	.. ..	15

Staff maintained for looking after the boiler—

	Rs.	a.	p.	to	R.	a.	p.	
Fireman	22	0	0	to	25	0	0	per mensem.
Coalman	15	0	0	..	16	0	0	..
Coolies	15	0	0	..	16	0	0	..
Turner	50	0	0	..	50	0	0	..
Fitters	25	0	0	..	50	0	0	..
Hydraulic press staff—								
Mistry	60	0	0	..	75	0	0	..
Coolies	20	0	0	..	30	0	0	..
Workers for cleaning the stuff—								
Females	0	5	0	to	0	6	6	per day.
Palledars	0	9	0	..	0	12	0	..
Oil department—								
Coolies	0	9	0	..	0	12	0	..

System of expression of oil.—Oil is expressed by means of hydraulic presses, expellers and kolhus; no cage presses are

used here. Castor, mohwa, alsi and cotton seed oils are pressed out by means of expellers and hydraulic presses. For the expression of edible oils kolhus are preferred. It is said that mustard oil expressed by means of kolhus has in it the pungent odour (jhar) without which the public begins to think the oil to be adulterated. Not unoften the sarson is mixed with "rai" to add to this pungent odour.

Refining of oil.—The refining of mohwa oil is done only by the Premier Oil Mill. This refining takes off to some extent the natural yellowness of the oil. The filtering bags made of thick white cloth used in the process of refining are obtained locally from the Muir Mills.

Manufacture of soaps.—One or two mills, such as the Premier Oil Mill, use the "foots" obtained by settling their oil for making dhobis' soap. But the bulk of such soap is imported from the Punjab.

Marketing system.—The mills send their oil to their commission agents in Calcutta and to other places direct to the purchasers. In fact some of the firms here have got their own shops in Calcutta for sale of their mill products. The rates of commission are Re. 1, Re. 1-8 and Rs. 2 per Rs. 100 worth of oil. The local brokers are paid at the rate of 4 annas per Rs. 100 worth of oil.

B.—Country kolhus.

Besides the power mills, there is a large number of "telis" in the district who express oil in wooden kolhus driven by bullocks such as can be seen working all over the country. A number of hand screw presses for the expression of castor oil chiefly and other oils is also to be seen. In hand screw presses bags are heated and thereby sharpness is diminished to some extent, whereas in bullock-driven kolhus this is not the case. The only advantage of the screw presses lies in the fact that the percentage of production is slightly higher, but the quality is comparatively impaired by heating the seed. The "telis" generally expresses sarson and tilli oil and occasionally barre (Kusum safflower) oil which they sell for 14 annas a seer. A kolhu ordinarily receives three charges in a day, and a charge or "ghani" consists of $3\frac{1}{2}$ seers of sarson or tilli seed.

The margin of profits in this business is estimated to be as follows :—

	Rs. a. p.
Price of 7 maunds 35 seers of seed consumed monthly at Rs. 6-8 per maund (sarson)	51 3 0
Price of 2 maunds 25 seers of oil at 11 annas a seer	72 3 0
Price of 5 maunds 10 seers of cake at Rs. 3-6 a maund	17 11 6
Gross profit	38 11 6
Deduct feeding charges of bullocks...	15 0 0
Net monthly income	23 11 6

“Telis” sometimes undertake to express oil for wages at one anna a seer. In villages they very often accept the cake in lieu of wages. The telis do not crush seeds other than “sarson and tilli” which they purchase locally. Sometimes they purchase mill oil and sell it as their own production at higher rates. They sell their production to local retail dealers (banias) and hawkers.

The net profits in oil-pressing business by means of power engine are calculated to be between 20 and 30 per cent. But with a vigilant management and favourable market conditions a higher percentage can also be reached.

Season.—Oil-pressing goes on all the year round but the work is brisk at harvest time when seed begins to pour into local mandis.

9. Other industries connected with edibles.

(i) Fishing. ✓

Vaishyas as a rule and Brahmans with the exception of a few Kanyakubja families do not eat fish. A tendency to

become vegetarians is noticeable among the Hindus in the district. Even Thakurs are rapidly giving up fish. Approximately 70 per cent. of the population use fish or would use it if it were available at low price. Sundried or smoked fish are very very seldom used in the district.

The principal fisheries of the district are classified as follows :—

- (a) *River fisheries.*—Fishing is done in the Ganges, the Jumna, Rind, Pando, Isan, Non and Sengur all the year round.
- (b) *Lake fisheries.*—Macharia and Itaili jhils abound in fish and fishing goes on from October to May.
- (c) *Tank fisheries.*—Tanks in the district contain a fairly large supply of fish. There are a number of kachcha and pakka tanks in the district. In some of these fishing is carried on all the year round and in some only from October to May.
- (d) *Canal fisheries.*—The four branches of the Lower Ganges Canal, viz., Etawah, Bhognipur, Fatehpur and Cawnpore, abound in fish, and fishing is extensively carried on in inundated fields between June and August.

Canal department, Court of Wards and Agricultural department owns fisheries which are auctioned by the two former and leased out by the latter. The zamindars too give out leases in respect of fisheries owned by them for various terms ranging between 1 to 15 years.

Many communities in Cawnpore city depend for their livelihood on fishing. These dispose of their catches by sale in the market direct or through middlemen—Kunjras, etc. The earnings of fishermen per head are approximately calculated to be 10 annas a day. These communities of fishermen of Cawnpore city are really poor, but not in debt. The professional fishermen are generally Kahars by caste, but Musalmans, Pasis, Kories and Mallahs are also seen carrying on fishing as a subsidiary occupation.

The fish available in the district are of the following varieties :—

- | | |
|----------------|----------------|
| (1) Hilsa. | (14) Silond. |
| (2) Naini. | (15) Tingra. |
| (3) Saur. | (16) Ritha. |
| (4) Mohee Mac. | (17) Bachwa. |
| (5) Bhur. | (18) Baikari. |
| (6) Kursa. | (19) Reech. |
| (7) Pota. | (20) Sakchi. |
| (8) Chilwa. | (21) Gunch. |
| (9) Andwari. | (22) Batasi. |
| (10) Rohu. | (23) Singi. |
| (11) Katilwa. | (24) Mungari. |
| (12) Parhin. | (25) Balaunda. |
| (13) Pariasi. | (26) Gungweri. |

The following implements of fishing are used in the district :—

Name.	Description.	Material used.	Cost.
1. Mahajal ..	Small pieces of net stitched.	String, ropes, flex, interwoven to form one large net 100 yards by 4 yards. Weights are fixed to one edge and floats to the other. Baked mud used as weight and gourds as floats. This net is used for fishing in large rivers such as the Ganges, etc.	Rs. 250
2. Chhauta ..	It is smaller than Mahajal. This sort of net has got pockets.	Cotton ropes ..	20
3. Ghumana ..	A circular thing resembling a petticoat and having weights fixed at the bottom which is a large circumference. It is also provided with pockets.	Ditto ..	15
4. Parti ..	10' X 6' in size. Two rods run through both the narrow ends and ropes along the long side keep the net open. Two people walk along holding the rods.	Ditto ..	5
5. Jhaba ..	Used for fishing in inundated fields. It is a framework of farm sticks having the shape of a pyramid.	Cotton ropes and also of jhau straws.	2
6. Kher ..	Used for draining rapid flowing streams.	Cotton ropes ..	2

All implements of fishing, except hooks and reels, are made locally. Mahajal is supposed to last for one year and the others about nine months.

The principal fish markets in the district are the Cawnpore city and Cantonments. These markets are adequately stocked. All stock is disposed of easily and there is ample demand for more. The prices of fish in Cawnpore range between 5 annas and 6 annas per seer. All fish offered for sale are caught locally and not imported from elsewhere.

Fish are occasionally exported to Lucknow. The sale is generally organized through middlemen who personally take their stock to Lucknow for sale. Fish are exported in raw condition without being cured. The writer is told that all catches are utilized, except in hot weather when some of the fish coming from the outlying parts of the districts into Cawnpore decompose.

(ii) *Ice factories.*

There are two ice factories in Cawnpore—the Bhargava Ice Factory and Juggilal Kamlapat Ice Factory. The daily production of ice in both the factories is estimated to be 1,200 maunds. The Bhargava Ice Factory is the more important of the two and its estimated daily outturn comes to 875 maunds. About 400 maunds of the daily outturn is exported to Pilibhit, Mirzapur, Jubbulpore, Lucknow, Jhansi, Saugor, Shahjahanpur, Moradabad and Kathgodam and the rest is consumed in the city. This factory has got a contract for the entire Oudh and Rohilkhand Railway line and for the East Indian Railway line from Allahabad to Kalka, including Jubbulpore branch. The total monthly expenditure of the factory comes to about Rs. 2,500, including the pay of the Engineer who gets Rs. 1,000 per month. The selling price of ice ranges between 8 annas to Re. 1-4 a maund.

The work is brisk from April to August; but it goes on up to November.

10. Textiles.

Cotton.

(1) *Cloth.*—Cawnpore is a distributing centre for cloth of provincial, if not of all-India, repute. It supplies foreign, Indian mill-made and hand-woven cloth to almost the whole

of the provinces with the exception of a few districts, served by Delhi. In normal years its extensive trade comes to about 10 crores worth of cloth. There are about 20 or 25 importing houses in Cawnpore which are concerned with the direct import of foreign cloth, mostly from European countries, these firms deal with about 100 local wholesale agencies which in turn pass on the goods to retail vendors through intermediate commission agents. The approximate value of such imports amounts to from 70 to 80 lakhs of rupees per year. The following are the countries which largely contribute to these imports viz. :—

England, Germany, France, Belgium, Italy, Austria, Switzerland and Japan send all sorts of cotton and silk goods :—

Place of import.	Description of cloth.
Manchester	... Prints, dhotis, markin, malmal, longcloth, Italian, Tassars, dyed goods such as " tool " and coloured " books " etc.
Bradford	... Woollen serge, coatings, tweeds, Italian (cotton), Alpacca, flannel (viyella).
France	... Silk.
Germany	... Kashmere cloth, woollen flannel, velvet shawls.
Austria	... Gold and silk embroidered dopattas, cotton dopattas.
Switzerland	... Chikan, granadiles (panaphal) for dhotis and dopattas.
Belgium	... Cotton kashmira with artificial silk.
Italy	... Velvet, cotton, wintians, silk tussors, satin print.
Glasgow	... Prints of superior quality, but in very small quantity.
Japan	... All sorts of cotton and silk goods.

Besides the above importing houses in Cawnpore, foreign cloth is also supplied to the Cawnpore market to the extent of about 4 crores of rupees annually from Calcutta, Bombay, Karachi, Delhi and Amritsar.

Indian mill cloth is imported from Bombay, Ahmedabad, Indore, Nagpur, Sholapur, Madras and Agra. The market

is also full of the production of local mills. The hand-woven cloth is imported from the following places :—

Description of cloth.	Place of import.
Silk	... Benares, Bhagalpore and Murshidabad.
Cotton (cloth)	... Benares, Bhagalpore, Tanda, Etawah and Shahjahanpur.

The total annual value of swadeshi mill-made and hand woven cloth is estimated to be about 5 crores.

Export and re-export.—Cawnpore exports cloth to the Central Provinces, Rajputana, Bihar, the Punjab and Nepal. Sometimes the cloth is re-exported to Bombay and Calcutta. The production of the local mills is exported to Rangoon and other places in India and also to Egypt and East Africa.

Marketing system.—The business is transacted through brokers who work for different sets of dealers. One set of brokers works for the importing houses and negotiates for the sale of their goods with the wholesale dealers charging 6 annas per cent. brokerage. The second set works for the arhatias who make purchases from the wholesale dealers for their biyoparis. In this case the dalals get 3 annas 6 pies per cent. brokerage from the wholesale dealers, but as a matter of fact they get between 4 annas and 8 annas per cent. in addition (by private arrangement) for bringing customers to the wholesale dealers. For all the sales transacted the wholesale dealer has to pay 15 annas per cent. as discount to the biyoparis, out of which he pays 8 annas per cent. to the arhatiya who also charges 7 annas per cent. from the wholesale dealer. This means that arhatiyas get in all 8 annas from biyoparis plus 7 annas from the wholesale dealer plus 10 annas per cent. per month interest for the price which he pays to wholesale dealer a month after the purchase. The wholesale dealer, therefore, has to lose Rs. 2 per cent., the biyopari gains 7 annas per cent. and arhatiya Re. 1-9 per cent. in one transaction. The transaction may be shown as below :—

Importing house.
Wholesale dealer.
Arhatiya.
Biyopari.
Retailer.

Actual consumer or customer.

N.B.—In some cases the biyopari and the retailer is the same person.

Suggestions for improvement.—(i) There once was an organization like the Cawnpore Piece-goods Association which looked to the interest of local piece-goods merchants. This association has now ceased to exist. But such an organization is a great necessity as it can guard the interest of these merchants and attend to the details of their trade in general, such as regulating the time limit for payment of price by the arhatiyas to wholesale dealers. This will have the effect of keeping down market prices which are under the present system high. The wholesale dealers naturally charge higher prices for their goods as these are not paid then and there at the time of the transaction.

(ii) It will also keep the brokers under control who charge brokerage by private arrangement over and above the fixed rate.

(iii) It will decide the disputes between different firms at much less cost

As the local "Piece-goods Association" has vanished and a want is felt for some responsible body to look generally to the interest of these merchants, the local Chambers of Commerce should be induced to take necessary interest in these affairs and organize a section for these people.

(2) *Dyeing and bleaching.*—Dyeing is carried on by cottage workers in the city as well as by the mills in their dye-houses with power machinery.

The cottage workers mostly use fugitive colours as they are more in demand in local garment dyeing except in the case of the ground work of lihafs where fast colours are used. All imported foreign dyes are used. But indigenous dyes are also used. Indigo deserves special mention as buff colour and iron tanet are made by the use of indigenous colours also. Khaki colour is prepared from bichromate and also from "mitti."

A good deal of yarn dyeing required in the manufacture of durries and lenhgas is also carried out by these cottage dyers at a fairly cheap rate. Indigo dyeing, for instance, is done by these people at the rate of 8 annas to 10 annas per bundle (10 pounds). The ground work of lihafs, etc., is done both in direct and basic colours at a charge varying between 8 annas and 10 annas per piece of 20 yards. The earnings of a dyer average about Rs. 40 per month.

There are about 50 dye-houses scattered over the different mohallas in the city, such as Parade, Generalganj, Hatia, Faithfulganj and Shujaatganj.

Mill-dyeing.—The following mills and factories in Cawnpore have their own dye-houses where dyeing of yarn and cloth is carried on on a large scale :—

- (1) The Cawnpore Cotton Mills Company, Limited.
- (2) The Elgin Mills Company, Limited.
- (3) The Muir Mills Company, Limited.
- (4) The Cawnpore Woollen Mills, Limited.
- (5) The New Victoria Mills, Limited.
- (6) The Cawnpore Cloth Dyeing and Printing, Limited.
- (7) H. Bevis and Company.

Wool is dyed by the Cawnpore Woollen Mills only, while the Elgin Mills are said to be doing union dyeing. The Cawnpore Cotton Mills are putting up a plant for dyeing cotton as such.

The mills have their own trained dyeing masters or who may be called their dyeing experts. But some of their dyeing is also done by contract work, for instance, such dyeing as can be done by dyers without special technical training. Such contracts are given at rates previously settled either for the dyeing only or for the supply of requisite dyed material. Mills usually do not undertake outside dyeing as their dye-houses can barely cope with their own work.

Bleaching.—The Cawnpore mills possess their own bleach-houses where bleaching is carried out under expert supervision with modern plant. Most of the mills have installed electrolyzers whereby they can make their own bleach liquor. They have also arrangements for finishing of cloth, for instance, starching machines, damping machines, stantering machines and calendering machines. Some of the mills have got equipment for preparation of flannellets. Dyes of German, American and British make are mostly used.

Wool-dyeing.—Loose wool, yarn and cloth are dyed. The dye-house is equipped with scouring machine, milling machine and other plants suitable for the production of different classes of articles.

Dyeing School in Cawnpore, its scope and utility.—Instruction in dyeing and printing is imparted in the Government

School of Dyeing and Printing. There are two courses : (1) the Foreman dyers' course and (2) the Artizan course. The school attends various annual exhibitions in the provinces and has got a peripatetic dyeing school to give demonstrations in modern methods of dyeing and allied trades to cottage workers on the spot. For particulars the reader is referred to the Compendium of Technical Schools published by Government and obtainable from the Director of Industries, United Provinces, Cawnpore. The boys, after their training, find employment in dyeing, bleaching and finishing departments of the cotton mills, as travellers, demonstrators or agents of colour firms and in independent business. In fact, at present, trained men have to be imported from outside the United Provinces. The textile printing trade also needs much improvement in the technics of printing and the school is doing much in both these lines though it is not able to cope with the calls on it as it is said to be ill-equipped. A few machines are lying idle and cannot be worked properly without additions which are essentially necessary to make the school as useful as it should be. With a view to provide practical training to the boys instructions in garment dyeing and laundry work should also be organized in the school.

The Peripatetic Dyeing School carries instructions to the doors of numerous village dyers and printers—old and young—who cannot find time owing to their business occupations to take a course at the Central School at Cawnpore. Considerable difficulties are attached to the working of this school and the greatest of all is the illiteracy of the people who derive benefit from its working.

This peripatetic school is visiting district after district where there is a dyeing or printing trade of some importance. During the last two years it visited Tanda, Meerut, Najibabad, Lucknow, Azamgarh, Mau and Mubarakpore.

It is working at present at the last two places and its programme for nearly six months ahead is booked. Many of the District Boards take considerable interest in the working of this school and give encouragements to the students attending the instructions. The Etawah and the Banda Boards have invited the school to their districts and promised prizes of Rs. 100 for distribution to students for good work and regular attendance.

The type of work carried on varies considerably. At Tanda it consisted in teaching of dyeing of sulphur colours, mineral colours and vat colours on cotton and the improved methods of printing basic and allizarine colours. At Meerut the main work consisted of teaching improved methods of dyeing the above-mentioned varieties of colours and introduction of printing for the tedious method of dyeing by "tying up." At Najibabad and Lucknow, teaching of wool dyeing by direct and acid chrome colours required concentration of attention. In Mau and Mubarakpore improved methods of cotton dyeing and silk dyeing are proving of considerable interest.

(3) *Calico printing*.—The following are the popular styles in cloth printing in which fair amount of work is done on a cottage industry basis such as is to be seen in Cawnpore—printed palangposh, janimaz, quilts, table cloths, curtains, jajams and lihafs. The printing is done on cotton cloth such as twill markin, garha, malmal and longcloth. Very little printing is done on silk. The volume of this type of cloth printing done in a year in Cawnpore may be roughly valued at Rs. 50,000.

The prices of various prints are as follows :—

Palangposh	...	...	Rs. 3 to Rs. 6.
Table cloth	...	...	Re. 0-8-0 to Re. 1-8.
Lihafs	...	...	Rs. 2 to Rs. 5.
Curtains, 2½ to 3 yards by 2 yards			Rs. 4 to Rs. 5.
Jajams	...	...	Rs. 2, 6, 8, 20, 25 and 40.
Jajams 2½ yards by 1½ yards	...	...	Rs. 2.
„ 10 yards by 5 yards	...	...	Rs. 25.

The blocks are made locally and also imported from Benares and Lucknow where they sell for Rs. 2, Rs. 4, Rs. 6, Rs. 10 and Rs. 20, according to design. The blocks used are of wood but where heavy designs are to be printed, they are padded with cotton so that the colour be transferred more evenly. This is not done in Farrukhabad.

Designs.—The figures of "Jhars" (natural forest scenery), flowers and minaretttes are the usual designs. Figures of birds and animals which are so common in Farrukhabad curtains, are absent. Designs are generally chosen by the

firms. The making of new designs being expensive the blocks of the old stereotyped designs are used

Wages.—Both the monthly and daily wage systems prevail. The monthly pay of a printer ranges between Rs. 20 and Rs. 40, while the daily wages are Rs. 2 or less.

Organization.—The karkhana system prevails. But there are also individual workers who prefer to do job work and independently sell their products in the local bazars. Biyoparis visit the place and purchase their stock wholesale from the karkhanas.

Dyes.—The dyes used are mostly aniline; fastness of colour is not much cared for. The only fast colour which is met with in these prints seems to be the black colour got out by the use of aniline black. Prints are usually sold unwashed. Dyes are obtained from the local bazar and some of the colours—usually yellow and pink—are also printed on dyed grounds

Suggestions for improvement.—The work is poor in this district. The registering is bad and calendering (kundi) is done by wooden mallets on a wooden support. The filling in work is very crude as they do it by means of a "pota." Perhaps a better method as suggested by Mr. Shroff in his notes in Farrukhabad and Lucknow reports would be of great use and would certainly be an improvement. Printing of fast colours such as alizarine may also be introduced with advantage. The printing section in the Dyeing School, if expanded, ought to be of great help. Better designs with the help of the Art School at Lucknow should be introduced. It may also be useful to induce professional printers to come over and take advantage of the facilities offered at the above school of knowing something about modern methods and improvements in their own line.

(4) *Ginning and pressing.*—There are 10 important ginning mills in Cawnpore City of these five are equipped with presses also. The Hydraulic Pressing Factory does not gin but only presses ginned cotton into bales. The total number of gins in all the mills of Cawnpore is estimated to be about 439.

Kapas grown in the district is known as "desi" (or Bengal variety) The district produces about 157,360 maunds of kapas every year. In addition about 400,000 to 600,000 of

maunds of kapas from the western and trans-Gangetic districts, is imported every year within the radius of 50 to 75 miles for being ginned and pressed in these factories. "Gangapar" kapas, i.e., that from trans-Gangetic districts is of a quality superior to the desi. Its staple is longer and more glossy than the staple of "desi kapas." "Manwa" kapas comes from Bihar in the month of July, to the extent of 80,000 to 100,000 maunds. It is inferior in quality to desi kapas and its staple is shorter than that of desi kapas. The outturn of lint in it is usually one-fifth of the kapas while the desi kapas yields one-third lint on ginning. The seed is exported chiefly to the Punjab.

The usual season for work in this district is from October to March.

Ginned and pressed cotton is exported to Calcutta and Bombay. More than half the quantity of ginned cotton is used in local spinning and weaving mills and the rest is either exported to other provinces in India or to England.

The ginning charges prevalent in the district range from 8 annas to 9 annas per maund of kapas. Pressing charges including cost of hoop and gunny are Rs. 5 to Rs. 5-8 per bale of 400 pounds (cotton), or excluding hoop and gunny Rs. 2 to Rs. 2-8 per bale.

Wages.—Labourers—Males get 10 to 14 annas a day.

Females 7 to 8 „ „ „

Out of the 10 ginning factories, six buy their own kapas and gin it, the rest get bazar constituents. Besides the daily wage system contract system is also in vogue in ginning. The contractors fix up their own contract rates for ginning which are generally 2 to 3 annas higher than what they have to pay to their workmen.

Condition of the industry.—The ginning and pressing business of Cawnpore has been adversely effected by the springing up of ginning factories in other adjoining places such as Kanauj, Bindki Road, Madhoganj. The production of kapas in the district is not sufficient to feed all its ginning and pressing factories. The outturn of one gin is estimated to be about one bale of 400 pounds per day of 11 hours. According to this calculation, the total outturn of 439 gins for the whole season of 100 working days would be 43,900 bales, for which about

642,438 maunds of kapas is required. Out of this the district produces only about 157,360 maunds of kapas. The factories are therefore dependent on other districts for their supply of work to the extent of three-fourths.

(5) *Weaving*—(a) *General*.—Cawnpore city has many weaving and spinning mills. Between them they produce 225 bales of yarn of 500 pounds each. Out of these 200 bales are consumed by themselves for weaving cloth and the rest is sold to the public. Cawnpore being a great distributing centre for yarn this quantity is quite insufficient for its needs. It therefore imports yarn from outside the province. The estimate of imports is 400 bales of 400 pounds each monthly, especially when the prices of other mills are lower than those of Cawnpore yarn. Most of this yarn is exported to other provinces—a little being consumed in the district by weavers of cloth and durries in and outside the city.

The import of yarn is made chiefly from Hathras, Bombay Jalgaon, Ahmedabad, Baroda, Calcutta, Kishangarh, Ujjain, Petland (dved yarn), Moradabad, Amritsar, Lahore, Agra and Kanauj, and the export or re-export is made to the Punjab and other districts in the United Provinces and Bihar.

Mills produce cloths of many qualities and various designs, but their speciality is twill which commands a good reputation. Coarse cloth is manufactured on hand-looms in the district. Garha, Charkhana or lenhgas are the common varieties.

Organization (referring to hand-looms only).—The family is the unit. Women help in sizing and weaving but not in warping. They also wind yarn on the bobbin. Children and males do the warping. Warping is paid for at 2 annas per 24 yards—a rate higher than that prevalent at Lucknow. Dressing and sizing is done by the members of the family.

Counts used.—Yarn of counts nos. $6\frac{1}{2}$, 8, $8\frac{1}{2}$, 10, 12, 16, 20, 21 and 25 is generally used in the district.

Outturn.—The daily outturn of a weaver in this district is generally between 5 to 9 yards of cloth.

Marketing system.—Yarn is usually sold to the weavers on 8 to 10 days' credit. Interest is charged at 10 annas per cent. per mensem after the expiry of this period. Cloth is sold to the dealers who pass it on to the biyoparis from outside the district. Sometimes a weaver is fortunate in disposing of his goods by taking it to the neighbouring market.

Profits.—In weaving a *than* of ordinary garha 12 yards in length the margin of profits is estimated to be as follows:—

			Rs. a.
Yarn 6½ ^{as} —2 seers	...	...	3 8
Cost of sizing	...	...	0 1
Wages for warping	...	...	0 1
			—
Total	...	...	3 10
			—

This will be ready in one day and will sell for Rs. 4-8 to Rs. 5. The saving of 14 annas as wages is one day's earning for the whole family.

(b) *Durrie weaving.*—Faithfulganj and Shujaatganj are the centres of durrie weaving in Cawnpore city. About 500 actual workers are engaged in manufacturing durrries on "Desi khargas" (Pit looms). Plain and striped regimental durrries are mostly woven. They are of standard weight 4 pounds and are not so closely woven as Bareilly durrries. Females and males both take part in this particular cottage industry. Females usually do the preliminaries such as warping, etc.

Outturn.—The outturn of durrries is estimated to be 500 every day. Both bed and floor durrries are manufactured, but the cottage workers ordinarily make bed durrries. Mill yarn of counts nos. 2, 5, 6 and 8 is usually used in making bed durrries. A workman is expected to weave 6' x 3' in a day.

Export.—These durrries are chiefly exported to Calcutta, Bombay and the Punjab. The export within the United Provinces is very limited.

Wages.—Where piece wages prevail they come to 3 annas to 6 annas per square yards generally. The head factory man advances yarn to the actual weavers. Price is settled at the time of the advance and durrries are purchased by the head factory man at that rate.

Marketing system.—The durrries are exported through the dealers who purchase them either from the manufacturers themselves or from the head factory men. The latter are a sort of agents who take orders from the dealers, invest their money and get them executed.

Margin of profits.—The margin of profits in manufacturing an ordinary regimental durrie of the weight of 3 to 4 pounds are calculated to be as follows:—

	Rs. a.
Yarn for weft Nos. 2 and 5, 3 pounds	
2 ounces 	1 12
Yarn for warp 4 ounces (10' × 3' or 10' × 2')	0 4
Dyeing charges 	0 4
Miscellaneous 	0 1
	<hr/>
Total 	2 5
The head factory man sells such a durrie to a military contractor for ...	3 4
	<hr/>
Gross savings to head factory man ...	0 15
Actual weavers wages 	0 6
	<hr/>
Net savings to the head factory man ...	0 9
	<hr/>
The contractor sells such durries for ...	4 0
	<hr/>
Net profit to contractor 	0 12
	<hr/>

In making a bazar durrie 7' × 4' (weight 3½ pounds the margin of profits roughly calculated will be as follows:—

	Rs. a.
Hill yarn 3½ pounds count No. 2 ...	1 12
Mill yarn for warp 	0 4
Dyeing charges 	0 3
Weaving charges 	0 8
	<hr/>
Total cost of head factory man ...	2 11
Head factory man sells this for ...	3 8
	<hr/>
Savings to head factory man 	0 13
	<hr/>

Mills manufacture what are popularly known as "Panja-ki-darri" so called because the weft is beaten with an iron tool resembling a hand (panja) in order to give the durrie a close texture.

The mills engage contractors who keep their own men to work on the mill premises. In order to have a hold on the workmen the contractors have to make advances which extend from Rs. 100 to Rs. 500. Service may only terminate on the repayment of this loan. Yarn of counts Nos. 10 and 16 is usually used in making floor durries.

Bareilly and Farrukhabad weavers are employed in the mills. It is said that these weavers can turn out more closely woven texture than those of Cawnpore.

The durries are made in five different qualities and the prices of plain durries range from Rs. 2-12 to Rs. 4-8 per square yard and of those with borders from Rs. 2-14 to Rs. 4-10 per square yard. Durries having one colour throughout or granite centred durries having centres of mixed colours interwoven are the specialities of the mills. Mill made durries $6\frac{1}{2}' \times 3'$ with stripes in various colours sell for Rs. 7 to Rs. 10 each.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

Unlike several other districts in the United Provinces Cawnpore is a great manufacturing district. In fact it is a great distributing centre in these provinces. It is full of well-organized factories and most of the industries have been centralized in Cawnpore city itself. Although there already exist several well-organized factories yet there is ample scope for more in the district to cover several other branches of industrial activities.

1. Glue.

Although Cawnpore is a premier manufacturing city in these provinces yet it does not possess any organized factory for the manufacture of glue which is imported in no small quantity from foreign countries. Glue manufacture is carried on in the city on a small scale on the cottage industry basis and the stuff is said to be exported by Messrs. M. P. Gupta and Company, and Desail and Company. These purchase glue locally for the purpose of export, hence act more as middlemen than actual manufacturers so far as this business goes. The raw material which consists principally of leather cutting is available in very large quantities within the district. The existence of the chemical works of Messrs. D. Waldie and Company affords facilities for the supply of chemicals, the other ingredient required in the manufacture of glue. Taking these facts into consideration it appears that in Cawnpore there is a scope for launching a well-organized factory for the preparation of glue, and if any expert takes up this industry there are chances of his success.

2. Soap factory.

Soap-making provides very important industrial outlet for the employment of vegetable oils. Cawnpore possesses eight or nine organized oil mills the outturn of which and of the country kolhus annually comes to about 500,000 maunds of oil. A large quantity is exported to other provinces.

Oil being the chief ingredient for soap-making it will be nothing but right to utilize it within the district for the manufacture of soaps. Some years back a factory known as "Kaisar Soap Company" was started in Cawnpore which had quite a satisfactory export trade, but it came to grief simply because of bad management. I am sure if the manufacture of soaps is taken up by any capitalists and if expert advice and good management are secured the work will be found profitable. The Jainica Soap works which have been started since 1923 are expected to supply the want of the district if the management continues to be satisfactory.

3. Hosiery.

The term hosiery includes within its scope all kinds of knitted articles. In Cawnpore socks and stockings, banias and mufflers, etc., are woven by the "Cawnpore Textiles" and no independent factories exist. It is simply surprising that Cawnpore, where a very large quantity of cotton yarn is woven in the course of a year and which is exported to feed hosiery factories in Lucknow and other places, should go without such factories. India is still a very great importer of socks, etc., from foreign countries. I should think it will be nothing but right to utilize the raw material within the city by launching a few such factories in Cawnpore which is a great manufacturing and distributing centre in these provinces. If small manufacturers form themselves into a sort of co-operative society and set up machines in the industrial part of the city such as Meston Road it will be the right step in the right direction.

4. Alluminum wares.

There is no factory for making alluminum wares in Cawnpore which necessitates the import of such wares into the city from Bombay factories where thalis, katoras, spoons, tumblers and saucers, etc., are manufactured in quantities. Presses for the manufacture of utensils of different sizes are seen in Bombay. If any capitalist comes forward and spends about Rs. 30,000 over this business he is sure to find this a profitable investment with all the facilities of electricity which are available in Cawnpore.

5. Utilization of slaughter-house products.

It is simply surprising that in a place like Cawnpore no button manufacturing factory exists. If an attempt is made in this direction with the help of button-making machinery

available at Messrs. Taylor Challan, Limited, Engineers, Birmingham, England, I do not think why the scheme should not succeed. Leather choppings can be utilized for making buttons.

6. Boot lace and eyelet-making.

Cawnpore is a great industrial centre for leather goods. It will be a right step if the manufacture of boot lace and eyelet-making is taken up by any capitalist. The machineries for the manufacture of such articles are also available.

7. Cardboard boxes.

In a place like Cawnpore where the daily outturn of boots and shoes of all descriptions is estimated to be above 3,000 pairs an industry for the manufacture of cardboard boxes can be easily established. These boxes can be utilized also for socks, banians and mufflers, etc., which are woven in Cawnpore textiles. The close vicinity of Cawnpore to Lucknow where several paper mills exist and where nucleus for this industry will be easily available is a circumstance which is likely to ensure success to the enterprise.

8. Hollow wares and tin works.

Although the manufacture of double seamed jointed tin cases and "dibias" is carried on by "Cawnpore Hollow wares and Tin works" yet there is scope for more factories of this nature in the city.

9. Hide.

A society on co-operative system for central hide stores with agencies at different hide centres in charge of trained persons capable of giving advice as to the preservation and despatch of hides and controlling the business is necessary in a place like Cawnpore.

10. Tanning school.

In a place like Cawnpore where there are about 72 big hide godowns and eight tanneries it will not be out of place if steps will be taken to provide instructions in tanning at the Government Harness and Saddlery Factory. A branch of the local leather-working school may be opened under the immediate supervision of the Superintendent, Government Harness Factory.

11. Museum.

The question of opening a museum in Cawnpore is already before the Board. The sooner this matter is decided the better as the existence of a museum in a central place like Cawnpore will in the long run be found to be of utility.

12. Furniture making.

There are very few furniture making shops in Cawnpore, although it has a thick and wealthy population with people of all grades. Furniture is mostly imported from Bareilly and Calcutta. Although as regards furniture making Cawnpore does not enjoy the same favourable position as Bareilly does, yet I think the furniture making will pay and if it increases the question of starting other industries such as varnish making and saw mills may also have to be considered.

13. Machinery for ordinary quality of boots and shoes.

In the several processes of boot and shoe making the use of machinery will be found very useful. An attempt should, therefore, be made to introduce machinery among the cottage workers for making inferior quality of shoes and slippers. The cutting of heels and sole pieces and pressing of leather thans should be done by machinery as it will economize time.

14. Fittings for harness, suit cases etc.

In the great distributing centre like Cawnpore where there are about 10,000 workers in leather goods and where different classes of goods such as harness suit cases, handbags, etc., are manufactured to suit the modern tastes the manufacture of fittings and frames for harness, suit cases and hand bags should be a profitable enterprise. The fittings are all imported and substitution of Indian-made fittings for imported ones is a proposition worthy of consideration by industrialists.

15. Chrome tanning.

In Cawnpore bark tanning is resorted to except at Messrs. Cooper Allen and Company, where chrome tanning for their own use is being done. There are eight tanneries in the city the daily outturn of which is about 2,000 hides. It is worth while to attempt introducing chrome tanning in Cawnpore.

CHAPTER IV.

STATISTICS.

1. Flour Mills.

1. *Ganges Flour Mills*—
Proprietors.—Shadi Ram Ganga Prasad.
Head office.—Calcutta.
Daily outturn.—100 tons.
Labour.—117 hands.
Machinery.—Steam engine with 350 B. H. P. and a boiler with 150 pounds pressure.
Export.—Flour is exported to most of the places in the United Provinces and some times to places outside the United Provinces.

N.B.—This is one of the two mills in the city which grind wheat for export purposes.

2. *Amarchand Bansidhar Flour Mills*—
Daily outturn.—60 to 70 maunds.
Grinding charges.—Eight annas per maund.
Machinery.—Electric motor.
3. *Lachhmi Narain Flour Mills*—
Daily outturn.—40 maunds.
Grinding charges.—Eight annas per maund.
Machinery used.—Electric motor.
4. *Faithful Flour Mills, LaTouche Road*—
Daily outturn.—50 maunds.
Grinding charges.—Six annas per maund.
Machinery used.—Electric motor with $7\frac{1}{2}$ H. P.
5. *Krishna Flour Mills*—
Daily outturn.—40 to 50 maunds.
Grinding charges.—Eight annas per maund.
Machinery used.—Electric motor.
6. *Shukla Flour Mill, Kursawan*—
Daily outturn.—30 to 40 maunds.
Grinding charges.—Eight annas per maund.

Machinery used.—Electric motor— $1\frac{1}{2}$ to $1\frac{3}{4}$ unit at 2 annas 6 pies per unit consumed in grinding 1 maund.

Labour.—Three hands at Rs. 57 per mensem.

2. Foundries.

1. *The Empire Engineering Company, Cawnpore.*—The firm was founded in the year 1897 by Mr. Gavin S. Jones. Since its inception great improvements have been introduced with the increasing mechanical skill of the workmen. The firm is provided with iron and brass foundries, blacksmiths' machines and saw mills. The foundry consists of four ample bays each capable of turning out about 200 tons per month. There are three cupolas one of 10 tons capacity and the other two of 5 tons capacity each. Excellent cast iron columns have been turned out at different times. "Morgan's permanent way keys" are manufactured for which the company hold exclusive contract with the Oudh and Rohilkhand Railway. Steam forging is also done. Modern machinery of all descriptions are also made. There are about 30 lathes of various sizes with slotting, shaping, gear-cutting and drilling machines. Crude oil engines and sugarcane mills are the speciality of the company. There is a painting and upholstery department which turns out suites of furniture with good finish. Well-boring and other boring tools are also manufactured.

2. *Messrs. Gokul Parshad Bandideen, Colonelganj, Cawnpore.*—

Business done.—Foundry, copper and brass wares and in addition newar and durrie weaving, etc.

Raw material.—Copper, brass and iron.

Import.—Copper worth Rs. 16,000 at Rs. 65 a maund.

Brass worth Rs. 10,000 at Rs. 60 a maund.

Iron worth Rs. 1,000 at Rs. 8 to Rs. 15 a maund.

Place of import.—Local, Bombay and Calcutta.

Outturn.—Vessels like dishes, cups and trays, and moulded articles, harness rings, buckles, and steel bars, etc.

Export.—Local sales (all in the market) and export to Ahmedabad. Total worth about Rs. 32,000.

Marketing system.—No agents are employed. Work is done mostly on a contract system when orders from mills and other customers are received.

Implements used in the manufacture.—Three lathes and other moulding implements.

Number of persons engaged.—10 permanent and the number is increased with the amount of work in hand.

... *Wages* are paid daily and monthly calculated at the rate of Re. 1 to Re. 1-4 a day.

3. Leather.

1. *Whitfield and Company, Cawnpore*—

Raw material.—(a) *Import.*—(1) *Leather.*—Mostly from W. B. Shewan and Company, Cawnpore, and United Provinces Tanneries of the value of Rs. 4,000 to Rs. 5,000 monthly, and from Bombay and Calcutta of the value of Rs. 500 per month.

(2) Rivets, locks and harness fittings direct from England of the value of Rs. 2,000 monthly.

(b) *Export of finished goods.*—(i) Boots and shoes, (ii) harness and saddlery and (iii) bags and trunks manufactured are exported to Calcutta, Bombay, Lahore, Rangoon (chiefly) and different places in the United Provinces of the monthly value of Rs. 10,000.

Capital.—(i) *Authorized.*—Rupees 5 lakhs.

(ii) *Subscribed.*—Rupees 48,000.

(iii) *Paid up.*—Rupees 34,600.

Labour.—110 hands employed.

Wages.—Both daily wage and contract systems prevail.

Daily wages are paid at the rate of Rs. 8 to Rs. 50 per mensem according to the qualification of a workman. Different contract rates for saddlery, harness, bags and trunks (vide Chapter II, Leather). The total monthly expenditure of the company comes to Rs. 2,700.

2. *Cooper Allen and Company, Limited, Cawnpore*—

Business done.—Tanning, currying, manufacture of boots and shoes and various other sundry articles,

Daily output.—Until recently the output of the tannery was 1,800 hides daily, but it is said the slump in the market has reduced the daily output.

Departments.—There are nine departments in this factory as follows :—

- (1) Curriers' shop.
- (2) Hand-sewn boot department.
- (3) Machine boot department.
- (4) Cutting department.
- (5) Closing department.
- (6) " Flex " boot and shoe department.
- (7) Equipment department for the manufacture of saddlery, accoutrements, gaiters and military harness.
- (8) Polish department for making dubbing and blacking for boots and for equipments.
- (9) Workshop—brass foundry, for making equipment fittings and mountings, saddle trees, stirrup and iron bits.

Labour.—1,879 hands.

It is said that this factory devotes itself to the manufacture of ammunition boots chiefly and the manufacture of civilian boots and shoes is not done on the same extensive scale. The production in the foot-wear department is estimated to be about 1,200 pairs of boots and shoes per day.

3. *The North-West Tannery Company, Limited, Cawnpore*—(new taken up by Cooper Allen and Co.)

Business done.—The business of the company consists of the manufacture of civilian boots and shoes, travelling outfits such as trunks, bags, etc., harness and saddlery. Tanning of leather is also done on modern lines. The company specialize in the dressing of crocodile, allegator, sambhar and other skins.

Manufacturing departments.—These are three in number :—

- (1) The boot and shoe department.
- (2) The saddlery department—where harness of the value of Rs. 40 per set of single brass mounted harness to Rs. 10,000 gold mounted postilion harness are manufactured.

(3) The bag and trunk department—where Gladstone kitbags, gun cases, gold bags are manufactured. The company have several branches in Calcutta, Benares, Lucknow, Simla and Karachi.

Outturn.—The daily outturn of civilian boots and shoes is estimated to be about 800 to 1,000 pairs.

Labour.—661 hands.

4. Brushware.

Brushware, Limited, Cawnpore—

Manufacture.—Brushes for cleaning decanters and other glass wares, brooms for sweeping floors, brushes suitable for household use, flour and cotton mills, breweries and brushes of various other descriptions.

Raw material.—The wood largely used is of Indian growth but for finer classes of brushwares satin is imported. Bristles, fibre and hair are used in this industry. Indian pig bristle is used as well as bristles from China and Europe. The foreign bristle is used for varnish, sash tool and paint brushes. For scrubbing brushes Mexican fibre is imported from Mexico. African bass is imported for drain brooms while "whisk" from southern India is used for mane and tail brushes.

Machinery.—The company is equipped with saw mills, planing, turning, moulding, trimming, drilling and filling machines and a mailing machine for making flat varnish brushes.

N.B.—The company has lately started the work of refilling ebony, silver and wooden-backed brushes.

Paid-up capital (ordinary).—Rupees 40,000.

Reserve fund.—Rupees 1,89,957.

Labour.—341 hands.

5. Oil Mills.

1. *United Provinces Central Mills, Bhannapurwa—*

Raw material.—Til, linseed, mahwa seed, mustard, castor seed and poppy seed. These are purchased from Cawnpore market and some times imported from Ramnagar, Haldwani, Tulshipur, Bahrapur, Nepalganj, Nanpara, Gonda, Bahrapur and Fyzabad.

Products where exported.—Calcutta, Burdwan, Buxar, Chhapra, the Punjab and other places in the United Provinces.

Daily outturn.—About 100 maunds oil from 300 maunds of raw material.

Machinery.—Kolhus and hydraulic presses with 2½ tons pressure steam engine—compound, non-condensing horizontal with 100 H. P.

Labour.—Mill gives employment to 150 hands.—Pay ranging from Rs. 20 to Rs. 175 per mensem. Daily labourers on 5 annas to 12 annas per day.

2. *Matadin Bhagwandas Oil Mill*—

Raw material.—Rape and mustard seeds purchased locally and imported from Sultanpur, Tulshipur and Amethi, etc.

Export of oil and cakes.—Export made generally to Buxar, Arrah, Sahasrampur in Bihar, the Punjab and Rajpufana.

Daily outturn.—62 maunds oil, from 190 maunds raw material.

Machinery.—56 kolhus worked by a steam engine with 19 H. P. and a boiler with 41 H. P.

Labour.—60 hands, pay ranging from Rs. 15 to Rs. 100 per mensem.

3. *Cawnpore Oil Mills*—

Raw material.—Castor and sarson seed purchased locally and imported from Etawah.

Export.—Oil exported to Calcutta, Dumraon, Arrah and Buxar. Cakes to Darjeeling and the Punjab.

Daily outturn.—About 100 maunds.

Machinery used.—100 kolhus and one hydraulic press worked by a steam engine and a boiler having a pressure of 125 pounds.

Labour.—53 hands.

4. *Premier Oil Mills Company*—

Raw material.—Mahwa seed purchased locally as well as from outside. Filtering bags for refining oil from Elgin Mills and woollen bags from Ahmedabad.

Daily outturn.—About 120 maunds,

Machinery used.—From hydraulic presses worked with a steam engine horizontal, simple, non-condensing 25 H. P. and a boiler with 100 pounds pressure per square inch.

Labour.—200 hands—the recurring monthly expenditure is said to be about Rs. 1,500.

6. Other industries connected with edibles.

Bhargava Ice Factory.—

Machinery.—Engine and boiler with 150 pounds pressure.

Number of persons employed.—Forty.

Wages.—Rupees 25 to Rs. 1,000 per month.

Raw material imported.—Ammonia.

Raw material.—Water.

Daily outturn.—875 maunds.

7. Textiles.

1. *The Victoria Mills Company, Limited, Cawnpore.*—

Raw material.—About one half of the cotton purchased locally, and in the Deccan is made into yarn for the Indian markets and the rest woven into cloth for bazar trade in the United Provinces, Native States and north-western districts.

Manufacture.—Cloth, etc., yarn.

Machinery.—105,000 spindles and 1,400 looms.

Paid up capital.—Rupees 13,50,000.

Labour.—3,471 hands.

2. *The Muir Mills Company, Limited, Cawnpore.*—

Manufactures.—Every description of cotton cloths, yarns, tents, durries, farshes, canvas requisites of all kinds. Khaki and coloured drills, striped and other twills for shirts and sleeping suits, turkish honey comb and hackaback towels with fast coloured red or blue headings, table cloth (bleached and calendered), bed sheets, mattresses, pillow cases, counterpanes, horse clothing, durries, cords for riding breaches, khaki webbing, flax canvas, waterproof cloths, Valises, military kit bags, dark blue tennis screens, white cricket screens, flannels, blankets, grey jerseys, buttons, haversacks, awnings, bags and other

canvas requisites. Ropes of various sizes and designs—plain and coloured. Double or single-poled regulation tents, hill tents and others in various designs.

Machinery.—75,028 spindles and 1,544 looms. Dyeing and bleaching is done with modern machinery.

Labour.—2,756 hands.

3. *The Elgin Mills Company, Limited, Cawnpore city—*

Manufacture.—Ordinary grey yarn and cloth and tents, ropes, cotton carpets and floor cloth, medical cotton wool and bandage cloth.

Machinery.—43,000 spindles and 724 looms with a complete bleaching and dyeing equipment.

Capital.—Rupees 32,00,000.

Labour.—3,213 hands.

4. (a) *Cawnpore Cotton Mills Company, Limited, Cawnpore—*

Manufacture.—The output includes towels, shirtings, blankets, table cloths, drapery of various kinds, sheetings, suitings, drills and khaki twills, spinning of yarn is also done.

Export of finished goods.—The company exports its goods to South and East Africa, Egypt, Australia and the Federated Malay States and every part of India.

Machinery.—The mill has about 1,000 looms and 78,000 spindles and is fitted up with a dyeing and bleaching plant. The weaving shed is 250' x 200'.

Labour.—2,868 hands engaged.

Advertisement system.—This has been resorted to and the services of travelling agents who visit different parts of India are utilized.

N.B.—The Company is capable of turning out 30,000 yards of material daily.

(b) *Cawnpore Cotton Mills (Kakomi), Cawnpore—*

This branch manufactures tents and durries and carpets of all sizes.

Outturn of tents annually.—About Rs. 6,000 worth.

N.B.—A great proportion of these tents are required for Government purposes.

Number of spindles.—About 27,000.

Labour.—491 persons.

Both these branches are parts of the British India Corporation, Limited.

5. *Forbes Ginning Factory, Cawnpore—*

Industry.—Ginning and pressing.

Raw material—

Import.—100,000 maunds of kapas.

Place of origin.—Local and direct from Madhoganj (Lucknow district) and Harpalpur.

Export of cotton ginned.—100,000 maunds of kapas yielding about 7,000 bales, exported to Bombay and England but seldom to Calcutta.

Labour.—20 permanent hands—the total expenditure of the factory on this item is Rs. 900 per month.

Machinery.—Nominal H. P. of engine, 50 H. P.

6. *Cawnpore Woollen Mills Company, Limited—*

Raw material.—The raw wool comes from within the country and the countries to the north of India and from Australia.

Finished goods.—The manufacture consists of flannels, broad cloths, puttoos, serges, blankets, etc., and hosiery, such as jerseys, sweaters, scarves, socks and stockings and underwears, etc.

Machinery.—The mill is fitted with machinery such as scouring, carding, and balling machines, combs, spinning, frames warping mills, looms and milling machines.

N.B.—It was started in 1876 and is one of the oldest industrial concerns of Cawnpore. The trade mark of the Woollen Mills is "Lalimli". It was amalgamated into the British India Corporation, Limited, in 1920.

Labour.—Average number of persons employed daily, 2,895.

CHAPTER V.

DIRECTORY.

1. List of banks.

1. Chartered Bank of India, Australia and China, Cawnpore.
2. The Allahabad Bank, Limited, Cawnpore.
3. The Imperial Bank of India, Cawnpore.
4. The Alliance Bank of Simla, Limited (now gone into liquidation).
5. The Tata Industrial Bank, Limited (amalgamated with the Central Bank of India, Limited).
6. The National Bank of India, Cawnpore.
7. The United Provinces Christian Central Co-operative Bank, Limited, Cawnpore.
8. The Industrial Bank, Limited, Cawnpore.
9. The Punjab National Bank, Limited, Cawnpore.
10. The Unao Bank, Limited, Cawnpore.
11. The Kanyakubja Bank of India, Limited, Cawnpore.
12. The Trade Bank, Limited, Cawnpore.

2. List of boot and shoe manufacturers.

1. Government Harness and Saddlery Factory, Cawnpore.
2. Messrs. Cooper Allen and Company, Cawnpore.
3. The North-West Tannery Company, Limited, Cawnpore (taken over by the above).
4. The Sun Shoe Factory, Cawnpore.
5. Abdul Ghaffoor Shoe Factory, Cawnpore.
6. Agha Ali Ghazanfar and Brothers, Cawnpore.
7. S. Azeemulla and Sons, Cawnpore.
8. Haji Amir and Yakub, Cawnpore.
9. Ausan Shoe Factory, Parade, Cawnpore.
10. Charles Boot Company, Hiranman-Purwa, Cawnpore.
11. Raulf and Company, Boot and Shoe Manufacturers, Parade, Cawnpore.

12. Oriental Trading Company, The Mall, Cawnpore.
13. Messrs. Watal and Company, Mall Road, Cawnpore.
14. Messrs. Kureel and Company, Mall Road, Cawnpore.
15. The Victoria Leather Works, The Mall, Cawnpore.
16. Messrs. Whitfield and Company, Cawnpore.
17. Omega Leather Works, Mall Road, Cawnpore.
18. King Leather Works, Meston Road, Cawnpore.
19. Cawnpore Leather Works, Meston Road, Cawnpore.
20. Abdul Majid Abdul Rashid, Meston Road, Cawnpore.
21. Ehsan Ilahi, Cawnpore.
22. The Punjab Standard Shoe Factory, Cawnpore.
23. The Royal Boot Factory, Cawnpore.
24. Asia Boot Factory, Cawnpore.
25. The Empire Leather Works, Mall Road, Cawnpore.
26. The Union Shoe Factory, Cawnpore.
27. Warman and Brothers Boot and Shoe Factory, Halsey Road, Cawnpore.
28. The Curzon Leather Works, Halsey Road, Cawnpore.
29. The Foy Leather Works, Mall Road, Cawnpore.
30. The Reliance Footwear, Meston Road, Cawnpore.
31. Nizami Kalimi and Company Leather Works, Halsey Road, Cawnpore.
32. Amir and Son, Boot Manufacturers, Cawnpore.
33. The Standard Boot and Shoe Factory, Mouleganj, Cawnpore.
34. The Shandell Brothers, Boot and Shoe Manufacturers, Cawnpore.

3. List of important dealers in leather goods in Cawnpore City (saddlery, harness and suit cases, handbags, etc., etc.)

1. Mohammad Hafiz Mohammad Siddiq.
2. Cawnpore Leather Works.
3. Abdul Majid Abdul Rashid.
4. Islamia Leather Works.
5. Young and Company.
6. Cawnpore Industrial Works.
7. Mohammad Qasim Brothers.
8. Civil and Military Leather Works.
9. Union Leather Works.
10. Nandlal Purbhu Dayal.

11. Fayaz Mohammad Mushtaq Mohammad.
12. Habibul-Haq and Company.
13. Mohammad Ismail Mohammad Siddiq and Company.
14. Mahbub Bakhsh Hasan Ilahi.
15. Mohammad Afaq Mohammad Fayaz.
16. H. S. Muin-ud-din and Company.
17. Mohammad Rafiq Mohammad Laiq.
18. Mohammad Rafiq and Sons.
19. Ram Lal Brothers.
20. Great Western Leather Company.
21. Gauri Shankar and Company.
22. Nasir-ud-din Mohammad Yasin.
23. Osmania Leather Works.
24. Ram Lal Chakhan Lal.
25. King Leather Factory.
26. Mohammad Sharif.
27. Shafi-ud-din.
28. Aziz-ud-din and Sons.
29. Messrs. Whitfield and Company.
30. Shamshad Mohammad and Sons.
31. H. M. Nisar H. M. Hayat.
32. Mahmood Ali Mohammad Yasin.
33. I. H. Baḡas and Sons.
34. Alla Bux Abdul Haq.
35. Swadeshi Leather Works.
36. Government Harness and Saddlery Factory.
37. Messrs. Mangli Prasad and Sons.

4. List of hide merchants.

1. Shaikh Nur Mohammad, Quli Bazar.
2. Shaikh Karim Bukhsh, Quli Bazar.
3. Shaikh Ghulam Safdar and Tasadduq Husain, Quli Bazar.
4. Shaikh Ilahi Bakhsh and Abdul Ghafoor, Quli Bazar.
5. Lachhman and Babu Lal, Quli Bazar.
6. Haji Qamrud-din and Shams-ud-din, Quli Bazar.
7. Haji Inayat Ulla and Mohammad Hanif, New Road.
8. Mohammad Ismail and Mohammad Siddiq, New Road.
9. Haji Abdulla and Hafiz Abdul Rashid, New Road.
10. Ahsan-ul-Haq and Fazlul Rahman, New Road.

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11. Hashmat Ullah and Tafazzul Husain, New Road.
 12. Shaikh Amin-ud-din, New Road.
 13. Shaikh Karim Bakhsh and Hafiz Abdul Majid, New Road.
 14. Ali Ayub, New Road.
 15. Abdul Ghani Abdul Ghafoor, New Road.
 16. Qamr-ud-din Badr-ud-din, New Road.
 17. Mohammad Jafar and Shujaat Husain, New Road.
 18. Hafiz Abdul Ghani and Haji Abdul Karim, New Road.
 19. Mohammad Ibrahim Mohammad Suleman, Farrashkhana.
 20. Haji Mohammad Wazir and Mohammad Ismail, Farrashkhana.
 21. Nizam-ul-Rahman, Farrashkhana.
 22. Hafiz Ahmad Husain, Farrashkhana.
 23. Hidayat-ulla and Mohammad Anwar, Farrashkhana.
 24. Hafiz Abdul Karim and Hafiz Mohammad Rahim, Farrashkhana.
 25. Haji Mohammad Daud Khan and Brothers, Farrashkhana.
 26. Ali Bakhsh, Farrashkhana.
 27. Ali Raza and Wali Mohammad, Farrashkhana.
 28. Haji Ilahi Bakhsh Mohammad Husain, Farrashkhana.
 29. Hidayat Ullah Neamat-ullah, Farrashkhana.
 30. Haji Abdul Ghafoor and Brothers, Farrashkhana.
 31. Abdul Hakim Abdul Samad, Farrashkhana.
 32. Mohammad Ismail and Brothers, Farrashkhana.
 33. Haji Natha Ilahi Bakhsh, Farrashkhana.
 34. Haji Inayat-ulla and Ilahi Bakhsh, Butcherkhana Khurd and Pench Bagh.
 35. Chaudhri Abdul Subhan, Butcherkhana Khurd and Pench Bagh.
 36. Mohammad Ahmad and Mohammad Umar, Butcherkhana Khurd and Pench Bagh.
 37. Ishridas and Anwar Husain, Butcherkhana Khurd and Pench Bagh.
 38. Ilahi Bakhsh, Butcherkhana Khurd and Pench Bagh.
 39. Fateh Mohammad and Dost Mohammad, Butcherkhana Khurd and Pench Bagh.

40. Madar Bakhsh and Abdullah, Butcherkhana Khurd and Pench Bagh.
41. Shahab-ud-din and Zakir Husain, Butcherkhana Khurd and Pench Bagh.
42. Maqbul Husain and Mohammad Husain, Butcherkhana Khurd and Pench Bagh.
43. Haji Abdul Salam and Hafiz-ul-Rahman, Butcherkhana Khurd and Pench Bagh.
44. Haji Bakhsh and Abdul Sattar, Butcherkhana Khurd and Pench Bagh.
45. Mohammad Sharif and Abdul Rahman, Butcherkhana Khurd and Pench Bagh.
46. Husain-ud-din and Maula Bakhsh, Butcherkhana Khurd and Pench Bagh.
47. Haji Nabi Bakhsh and Abdul Wassey, Butcherkhana Khurd and Pench Bagh.
48. Karim-ud-din Abdul Rahman, Butcherkhana Khurd and Pench Bagh.
49. Maulvi Sharf-ud-din Mohammad Amin Butcherkhana Khurd and Pench Bagh.
50. Hafiz Ahmad-ullah Habib-ullah, Butcherkhana Khurd and Pench Bagh.
51. Ismail Brothers, Butcherkhana Khurd and Pench Bagh.
52. Hafiz-ud-din, Butcherkhana Khurd and Pench Bagh.
53. Fazl Husain Ghulam Rasul, Butcherkhana Khurd and Pench Bagh.
54. Haji Nathu Mohammad Ismail, Butcherkhana Khurd and Pench Bagh.
55. Mohammad Ibrahim, Butcherkhana Khurd and Pench Bagh.
56. Haji Bakhsh Haji Mohammad Jan, Butcherkhana Khurd and Pench Bagh.
57. Mohammad Siddiq Salim-ud-din, Butcherkhana Khurd and Pench Bagh.
58. Abdul Rahman Mohammad Suleman, Butcherkhana Khurd and Pench Bagh.
59. Nazar Mohammad Gulshir Mohammad, Butcherkhana Khurd and Pench Bagh.
60. Maula Bakhsh and Company, Butcherkhana Khurd and Pench Bagh.

61. Syed Mohammad Husain Ahmad Husain, Butcherkhana Khurd and Pench Bagh.
62. Amin Brothers, Hiranapurwa.
63. Ahmad Husain and Kashi Das, Hiranapurwa.
64. Haji Abdullah, Hiranapurwa.
65. Haji Kadir Bakhsh Mohammad Din, Hiranapurwa.
66. Carpet, Hiranapurwa.
67. Hafiz Abdul Sattar Karim Bakhsh, Hiranapurwa.
68. Azeem-ullah, Hiranapurwa.
69. Hasan Ali Nisar Ali, Hiranapurwa.
70. Charles Booth and Company, Hiranapurwa.
71. Forbes, Hiranapurwa.
72. Hafiz Mohammad Halim, Hiranapurwa.

5. List of tanneries.

	Average daily labour.
1. National Tannery, Jajmow ...	164
2. Cawnpore Tannery, Bhannanapurwa ...	361
3. S. B. Tannery, Bhannanapurwa ...	29
4. Schewan's Tannery, Jajmow ...	91
5. Cooper Allen, Cawnpore ...	1,879
6. North-West Tannery, Cawnpore ...	661
7. Government Harness and Saddlery Factory ...	1,695
8. United Provinces Tannery ...	64

6. List of important rangias.

1. Alla Bux, Cawnpore.
2. Makhdum, Cawnpore.
3. Ishri, Cawnpore.
4. Qudrat-ulla, Cawnpore.

7. List of important printing presses.

1. Star Press, Ram Narain Bazar, Cawnpore.
2. The Law Press, Parade, Cawnpore.
3. Light Press, Near Ram Narain Bazar, Cawnpore.
4. Job Press, Mall Road, Cawnpore.
5. Standard Press, Cawnpore.
6. Merchant Press, Rail Bazar, Cawnpore.
7. Omkar Press, Ram Narain Bazar, Cawnpore.
8. Intizam Press, Near Parade, Cawnpore.
9. Raghunandan Press, Cawnpore.

10. Coronation Press, Cawnpore.
11. Hindi Job Press, Cawnpore.
12. Mercantile Press, Cawnpore.
13. Rama Press, Cawnpore.
14. Shiva Press, Cawnpore.
15. Commercial Press.

8. List of dealers in gota.

1. Ram Raghubir Sheo Narain, Sabzi Mandi, Cawnpore.
2. Naraindas Maheshur, Chowk, Cawnpore.
3. Naraindas Mathra Prasad, Chowk, Cawnpore.
4. Puranchand Debi Prasad, Generalganj, Cawnpore.
5. Ramdayal Gotawala, Generalganj, Cawnpore.
6. Ram Bharose Gotawala, Chowk, Cawnpore.

9. List of dealers in silver and gold ornaments.

1. Badri Prasad Bulaqi Das, Chowk, Cawnpore.
2. Sidheshwar Piarey Lal, Chowk, Cawnpore.
3. Lal Bihari Sri Kishan, Chowk, Cawnpore.
4. Dhani Ram, Chowk, Cawnpore.
5. Lala Jaffu Mal, Chowk, Cawnpore.
6. Sundar Lal, Chowk, Cawnpore.
7. Babu Ram, Chowk, Cawnpore.
8. Bansidhar, Chowk, Cawnpore.
9. Hazari Mal Sohan Lal, Nayaganj, Cawnpore.
10. Bilas Rai Hardat Rai, Nayaganj, Cawnpore.
11. Kidar Nath, Nayaganj, Cawnpore.
12. Kishori Lal Gopal Das, Nayaganj, Cawnpore.
13. Ram Charan Shyama Charan, Nayaganj, Cawnpore.

10. List of zardozi karkhanas.

1. Jagat Narain and Company, Chowk, Cawnpore.
2. Ashraf Ali, Chowk, Cawnpore.

11. List of zardozi workmen (manufacturers) in the city.

1. Khurshed Ali.
2. Dildar Husain.
3. Nabban Sahab.
4. Nazir Husain.
5. Ashraf Ali.
6. Saddan.
7. Murtaza Husain.
8. Zakkan.

9. Maddan Khan.
10. Nadir Husain.
11. Nasir Husain.
12. Ashraf.
13. Zaki Husain.
14. Mohammad.
15. Nazir II.
16. Abdul Rahman.
17. Hingan Khan.
18. Fida Husain.

12. List of dealers in brass and copper wares (Cawnpore city).

1. Bisheshar Dayal Raggilal, Hatia.
2. Putti Lal Lalman, Chowk.
3. Manni Lal, Radha Kishan, Chowk.
4. Pachkauri Mal, Srikishan, Mouleganj.
5. Duli Chand Ram Ratan, Hatia.
6. Lala Ram Ram Antar, Hatia.
7. Jwala Prasad Baboo Ram, Hatia.
8. Pragdas Ram Narain, Hatia.
9. Hulasi Lal Bulaqidas, Chowk.
10. M. L. Garg and Company, Chowk.
11. Bhagwandas Pragdas, Mouleganj.
12. Bindraban Baraji Lal, Mouleganj.
13. Manakchand Shiva Prasad, Chowk.
14. Misri Lal Baldeo Prasad, Chowk.
15. Kandhayalal Raghunath Prasad, Chowk.

13. List of dealers in iron and galvanized sheet goods (Halsey Road, Cawnpore).

1. Lachhman Das Champa Ram.
2. Bihari Lal Bhajanlal.
3. Rikhi Nath Manohardas.
4. Piyare Lal Kanhai Lal.
5. Tejanlal Dina Nath.
6. M. Fahim-ud-din.
7. Jiwan Ram Kanhailal.
8. Mushtaq Ahmad and Brothers.
9. Ulfat Rai Ratan.
10. Shyam Steel Company.

14. List of Lathe Works (Cawnpore).

1. Singh Engineering Company, LaTouche Road.
2. Bharat Engineering Works, LaTouche Road.
3. Empire Engineering Company, Limited.
4. Empire Motor Engineering Works, Mall Road.
5. Mihi Lal, Parade.
6. Lochan, Parade.
7. Dwarka, Parade.
8. Mithila Mechanical Works, LaTouche Road.

15. List of dealers in firewood (Cawnpore).

1. Badri Prasad Gaya Prasad, Generalganj.
2. Ramcharan Thakur Prasad, Shuturkhana.
3. Mohammad Ismail, Bhusa Toli.
4. Azeemullah Mahtab, Bhusa Toli.
5. Mahadeo Prasad, Bansmandi.
6. Ram Narain, Couperganj.
7. Parmeshwar Nath, Permat.
8. Rahim Bux.
9. Abdul Ghani.
10. Ilahi Bux.
11. Umar Bakhsh.
12. Kifayat Ullah.
13. Mohammad Raza.
14. Mohammad Siddiq Mohammad Hanif.
15. 'Abid Husain.

N.B.—Nos. 8 to 15 are the biyoparis who deal in this trade on a large scale and take jungles on contract.

16. List of oil mills (Cawnpore).

	Average daily labour.
1. Premier Oil Mills, Couperganj . . .	116
2. Cawnpore Oil Mills, Couperganj . . .	190
3. Naraindas Lachhmandas Oil Mills, Rai- purwa . . .	124
4. United Provinces Central Mills, Bhannana- purwa . . .	...
5. Mata Din Bhagwandas Oil Mills, Bans- mandi . . .	66
6. Ganga Oil Mills, Bansmandi . . .	101
7. Hazari Mal Babulal . . .	56
8. Madho Oil Mills, Harbans Mohal . . .	...
9. Quitta Oil Mills, near Juhā station . . .	74

17. List of technical schools (Cawnpore City).

1. The Government School of Dyeing and Printing.
2. The Government Leather Working School.
3. The Government Technological Institute.
4. The Premier Commercial School.
5. The Pitman's Shorthand and Typewriting School.
6. Government Textile School.

18. List of tin box manufacturers (Cawnpore City).

1. Gajadhar, Hatia.
2. Rikh Lal, Hatia and Generalganj.
3. Budhu, Hatia.
4. Mannu Maharaj, Hatia.
5. Badri, Hatia.
6. Hiralal, Hatia.

19. List of principal cane furniture makers (Cawnpore).

1. Nazir and Brothers, Parade.
2. Niaz Ahmed, Parade.

20. List of principal calico printers (Cawnpore).

1. Mohammad Yusuf Abdul Rahim, Parade.
2. Madarulla, Colonelganj.
3. Haji Nizam-ud-din, Colonelganj.
4. Sheikh Humayun, Colonelganj.
5. Haji Abdul Ghafoor, Colonelganj.

21. List of ginning and pressing mills (Cawnpore City).

	Average number of persons employed.	Gins.
1. J. N. Cocolas and Company	... 179	56
2. Hazarimal Babu Lal	... ..	40
3. Juggilal Kamlapat (Cawnpore Oil and Ginning Factory)	... ..	32
4. Narain Das Lachhmandas	... ..	20
5. Nihalchand Baldeo Sahai	... ..	...
6. Sri Ram Mahadeo Prasad	... 45	32
7. Bijraj Panna Lal	... ..	...
8. Kunjilal Bihari Lal	... ..	...
9. Bhimji Manji Ginning Mills	... ..	...
10. Ahmarchand Janki Prasad	... ..	24
11. Sri Krishna Ginning Mills	... 270	67

		Average number of persons employed.	Gins.
12.	Debi Din Bhagwandin ...	...	...
13.	West Patent Press ...	...	...
14.	Bihari Lal and Kunjal Jute Mills and Ginning Factory ...	90	...
15.	Forbes Ginning Factory, Bansmandi	179	48
16.	Om Cotton Ginning Mills ...	31	...
17.	Johnson Ginning Mills ...	165	50
18.	Ganga Ginning and Oil Mill ...	...	70

22. List of cotton mills (Cawnpore).

	Average number of persons employed.
1. Elgin Mills Company, Limited ...	3,213
2. Muir Mills Company, Limited ...	2,756
3. The New Victoria Mills Company, Limited	3,471
4. Cawnpore Cotton Mills Company ...	2,868
5. Kakomi Cotton Mills ...	491
6. Cawnpore Textiles, Limited ...	288
7. Swadeshi Cotton Mills Company, Limited	930
8. Juggi Lal Kamapat Spinning and Weaving Mills ...	940
9. R. Agarwal and Company Cotton Waste Factory ...	60

23. List of woollen mills.

1. Cawnpore Woollen Mills Company, Limited (Lalimli) ...	2,895
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24. List of principal flour mills (Cawnpore).

1. Ganges Flour Mills.
2. Sri Ram Mahadeo Prasad.
3. Shukla Flour Mills, Kursawan (Electric power).
4. Upper India Rice and Flour Mills, Harrisganj.
5. Ratan Singh Flour Mill, Halsey Road.
6. Amarchand Bansidhar Flour Mill.
7. Lachhmi Narain Flour Mill.
8. Krishna Flour Mill, Halsey Road.
9. Faithful Flour Mill, Couperganj.
10. Cantonment Water Mill.

25. List of electrical works.

1. Indian Electric Supply and Traction Company, Limited, Cawnpore.

26. List of chemical works.

1. Chemical works of D. Waldie and Company, Nawabganj, Cawnpore.

27. List of brush works.

1. The Brushware, Limited, Cawnpore.
2. Indian Brush Factory, Cawnpore.

28. List of date matting manufacturers (Chatai Mohal, Cawnpore).

1. Wali Mohammad.
2. Gulzar.
3. Chunnu.
4. Manglu.
5. Jumman.
6. Dilloo.
7. Shahzade.
8. Phiku.
9. Wazir.
10. Sappoo.
11. Nathu.
12. Phiku II.

29. List of importers of cloth (Cawnpore).

1. Messrs. Jainy Brothers and Company, Maniram's Bagia.
2. Messrs. Sulzer Bruderer and Company, Maniram's Bagia.
3. Messrs. Kahn and Kahn, Kahu Kothi.
4. Messrs. Heeralal Babulal, Kahu Kothi.
5. Messrs. Fakeerchand Jainy, Kahu Kothi.
6. Messrs. Dwarkadass Shewji and Company, Generalganj.
7. Messrs. Goverdhandas Ramgopal, Generalganj.
8. Messrs. Bhoiraj Babulal, Generalganj.
9. Messrs. Sardarmul Hardatrai, Generalganj.
10. Messrs. Shushil Chander Dass and Company, Generalganj.

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11. Messrs. Makhanlal Bajranglal, Generalganj.
 12. Messrs. Rajnath and Company, Generalganj.
 13. Messrs. Gurbershah Kapoor and Company, Generalganj.
 14. Messrs. Kar Tarak and Company, Generalganj.
 15. Messrs. R. Fatehchand Jainy and Company, Generalganj.
 16. Messrs. Phoolchand Fatehchand, Generalganj.
 17. Messrs. Balka Shiwji and Company, Dalhai.
 18. Messrs. Gopinath Changamul, Chawalmandi.
 19. Messrs. Allen Brothers and Company, Limited, Civil Lines.
 20. Messrs. Ramsarup Kanudia and Company, Nachghar.
 21. Messrs. L. N. Gadodia and Company, Generalganj.

30. List of wholesale dealers in cloth.

1. Gopinath Changamul, Chawalmandi.
2. Bhojraj Babulal, Generalganj.
3. Madanchand Ramchander, Generalganj.
4. Kharidar Kapra Company, Generalganj.
5. Santlal Srikishan, Generalganj.
6. Bhagwandas Ramsarup, Generalganj.
7. Bilasrai Baijnath, Generalganj.
8. Keshonath Harikishan, Generalganj.
9. Rambaksh Nathmul, Generalganj.
10. Heeralal Babulal, Kahu Kothi.
11. Naorangrai Kaluram, Kahu Kothi.
12. Makhanlal Bajranglal, Generalganj.
13. Kaluram Sumairchand, Generalganj.
14. Begraj Hardwarimul, Generalganj.
15. Mathradass Ramkumar, Generalganj.
16. Jiwanlal Shiamsunder, Pandey Ji Wali Gali.
17. Biharilal Ramcharan, Badshahi Naka.
18. Ramcharan Rameshwar Pershad, Generalganj.
19. Balbhadarchand Munnalal, Generalganj.
20. Rukmanand Surajmul, Generalganj.
21. Jwala Pershad Badhakishan, Generalganj.
22. Brijkishore Bulakidass, Generalganj.
23. Chandka Pershad Ramsarup, Generalganj.
24. Ramkumar Ramaishwar Pershad, Generalganj.
25. Lachmichand Jagannath, Generalganj.

26. Chaturbhuj Shivji, Generalganj.
27. Umraolal Ramjilal, Generalganj.
28. Phulchand Fatehchand, Generalganj.
29. Mathra Pershad Matadin, Generalganj.
30. Harisingh Santokchand, Generalganj.
31. Gangadhar Shivnarain, Generalganj.
32. Ramgopal Mulchand, Generalganj.
33. Gurmukhrai Basdeo Pershad, Generalganj.
34. Ramkishandass Bindeshwari Pershad, Generalganj.
35. Bilasrai Hardutra, Generalganj.
36. Dwarkadass Pirbhudass, Generalganj.
37. Ramlal Bulakidass, Gudri Bazar.
38. Baijnath Gorakhnath, Jagannath Ji Wali Gali.
39. Basdeo Shivkarandass, Generalganj.
40. Munnalal Murlidhar, Generalganj.
41. Bastiram Matadin, Generalganj.
42. Madanmohan Giyaniram, Generalganj.
43. Kedarnath Shivkarandass, Generalganj.
44. Gulabrai Punnalal, Kahu Kothi.
45. Ramniranjandass Onkarmul, Generalganj.
46. Murarji Belji, Kahu Kothi.
47. Bansidhar Gopaldass, Jagannath Ji Wali Gali.
48. Raghunandanlal Jagannath, Generalganj.
49. Ramdayal Shambhunath, Generalganj.
50. Ramchander Munnalal, Generalganj.
51. Ramnarain Kishundayal, Generalganj.
52. Shersingh Rambirsingh, Ban Bazar.
53. Chaturbhuj Peeralmul, Generalganj.
54. Kidarnath Motilal, Generalganj.
55. Saligram Lallamul, Generalganj.
56. Shivpershad Pitamberlal, Generalganj.
57. Bansidhar Manoharlal, Generalganj.
58. Govardhandass Ramgopal, Generalganj.
59. Lachminarain Girdharilal, Generalganj.
60. Rampershad Sethi, Generalganj.
61. Balmukand Bankybeharilal, Kahu Kothi.
62. Chaitram Bansidhar, Generalganj.
63. Nainsukhdass Nagarmul, Generalganj.
64. Nagarmul Durga Pershad, Generalganj.
65. Jiwanram Ghanshiamdass, Generalganj.
66. Kanhiram Harmukhrai, Generalganj.

67. Jodhraj Jainarain, Generalganj.
68. Fatehnarain Amarnath, Generalganj.
69. Bholanath Munnalal, Generalganj.
70. Lalumul Agarwala, Generalganj.
71. Gopinath Agarwala, Generalganj.
72. Brijmohanlal Jagdishnarain, Generalganj.
73. Srikishan Brijnarain, Generalganj.
74. Shankerlal Bhagirathmul, Generalganj.
75. Totaram Bishambarnath, Generalganj.
76. Harkishandass Rupnarain, Generalganj.
77. Onkarnath Dwarkadass, Generalganj.
78. Kidarnath Rameshwar Pershad, Generalganj.

31. List of retail dealers in cloth.

1. Gangaram Puranmul, Generalganj Bazaza.
2. Madilal Dwarkadass, Badshahi Naka.
3. Changamul Mangamul, Generalganj Bazaza.
4. Madanlal Kanhiyalal, Generalganj Bazaza.
5. Bhagga Maharaj, Generalganj Bazaza.
6. Mukta Pershad Gur Pershad, Generalganj Bazaza.
7. Mukandilal Banwarilal, Generalganj Bazaza.
8. Pindilal Gatrumull, Generalganj Bazaza.
9. Kalka Pershad Ramcharan, Generalganj Bazaza.
10. Fakirchand Kundanlal, Generalganj Bazaza.
11. Nanhaimul Mathulal, Generalganj Bazaza.
12. Gangasahai Baijnath, Chowk Bazaza.
13. Ramlal Bulakidass, Chowk Bazaza.
14. Shiamsunder Luckmichand, Chowk Bazaza.
15. Naraindass Raghuberdayal, Chowk Bazaza.
16. Chandika Pershad Bazaz, Chowk Bazaza.
17. Ramcharan Pachaiya, Chowk Bazaza.
18. Rambaksh Anandilal, Chowk Bazaza.
19. Sudarshanlal Shivnarain, Chowk Bazaza.
20. Kashi Pershad Mulchand, Chowk Bazaza.

32. List of arhatias dealing in cloth.

1. Messrs. Chamolal Changamul, Maniram's Bagia.
2. Messrs. Gangadin Gaorishanker, Maniram's Bagia.
3. Messrs. Jugalkishore Baldeosahai, Gudri Bazar.
4. Messrs. Musaddilal Motilal, Gudri Bazar.

5. Messrs. Mukandji Govindji, Gudri Bazar.
6. Messrs. Lalitram Mangilal, Chakla Mohal.
7. Messrs. Maganlal Ramcharan, Generalganj.
8. Messrs. Hulasilal Ramdayal, Generalganj.
9. Messrs. Govind Pershad Mukandram, Generalganj.
10. Messrs. Ramsarup Pragdass, Generalganj.
11. Messrs. Bhagwandass Kashi Pershad, Generalganj.
12. Messrs. Manohardass Ram Pershad, Generalganj.
13. Messrs. Bastiram Matadin, Generalganj.
14. Messrs. Puttanlal Dalal, Generalganj.
15. Messrs. Onkarnath Dwarkadass, Generalganj.
16. Messrs. Ramharilal Lachminarain, Generalganj.
17. Messrs. Lachminarain Munnalal, Generalganj.
18. Messrs. Lachminarain Gopaldass, Generalganj.
19. Messrs. Sardarmul Hardutrai, Generalganj.
20. Messrs. Jagannath Ramnath, Generalganj.
21. Messrs. Ramcharan Dalal, Generalganj.
22. Messrs. Piragilal Gaya Pershad, Generalganj.
23. Messrs. Piragilal Ramnath, Generalganj.
24. Messrs. Shivkumar Ramkumar, Nawghara.
25. Messrs. Bholanath Murlimanohar, Generalganj.
26. Messrs. Gangadin Ram Pershad, Generalganj.
27. Messrs. Banarsidass Gur Pershad, Generalganj.
28. Messrs. Gangadhar Babulal, Generalganj.
29. Messrs. Surajmul Sagarmul, Generalganj.
30. Messrs. Kashi Pershad Mahabir, Generalganj.
31. Messrs. Parsotamdass Jagannath, Generalganj.
32. Messrs. Channulal Banvarilal, Generalganj.
33. Messrs. Brijmohandass Jankidass, Generalganj.
34. Messrs. Sital Pershad Shiamlal, Chatai Mohal.
35. Messrs. Bilasrai Jainarain, Chatai Mohal.
36. Messrs. Biharilal Ramcharan, Nawghara.
37. Messrs. Jawahermal Jankidass, Nachghar.
38. Messrs. Nanakchand Sadiram, Nawghara.
39. Messrs. Shambhunath Sankernath, Nawghara.
40. Messrs. Mamraj Maniram, Nawghara.
41. Messrs. Gaurishanker Baburam, Nawghara.
42. Messrs. Makhanlal Chainsukh, Nachghar.
43. Messrs. Lallamul Mulchand, Sirki Mohal.
44. Messrs. Shivbakashrai Saligram, Sirki Mohal.
45. Messrs. Sital Pershad Rameshwar, Sirki Mohal.

46. Messrs. Rambhajan Luchminarain, Hatia.
47. Messrs. Urilal Arathia, Lathi Mohal.
48. Messrs. Debidass Khatri, Lathi Mohal.
49. Messrs. Hariram Ramkishan, Lathi Mohal.
50. Messrs. Govindram Ganpatram, Sarai Lathi Mohal.
51. Messrs. Narainsingh Ramratan, Sarai Lathi Mohal.
52. Messrs. Shivbakashrai Srinarain, Sarai Lathi Mohal.
53. Messrs. Kidarnath Rambharosay, Sarai Lathi Mohal.
54. Messrs. Gajanand Chiranjilal, Kahu Kothi.
55. Messrs. Ramchander Brijlal, Kahu Kothi.

33. List of grain merchants.

1. Messrs. Gulabchand Choteylal.
2. Messrs. Kaishrimul Kanmal.
3. Messrs. Surajmul Chandmul.
4. Messrs. Phulchand Mohanlal.
5. Messrs. Bansidhar Manoharlal.
6. Messrs. Radhakishan Gopikishan.
7. Messrs. Ramjasmul Jainarain.
8. Messrs. Narsinghsahai Madangopal.
9. Messrs. Banvarilal Rambharosay.
10. Messrs. Tulsiram Jialal.
11. Messrs. Jagannath Mahadeo Pershad.
12. Messrs. Ramkarandass Rambilas.
13. Messrs. Saruplal Ramgopal.
14. Messrs. Ganeshilal Jugalkishore.
15. Messrs. Hanmatram Luchminarain.
16. Messrs. Punnalal Basantlal.
17. Messrs. Shivbakashrai Srinarain.
18. Messrs. Matadin Bhagwandass.
19. Messrs. Radhakishan Mangatrai.
20. Messrs. Motilal Chajulal.
21. Messrs. Bishambharnath Shivkumar.
22. Messrs. Manohardass Ram Pershad.
23. Messrs. Motilal Ramkumar.
24. Messrs. Ramdayal Madho Pershad.
25. Messrs. Rali Brothers.
26. Messrs. Loos Company.
27. Messrs. Kelachand Debchand.

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28. Messrs. Habib Kasam.
 29. Messrs. Daud Moti.
 30. Messrs. Haji Abdul Latif.
 31. Messrs. Husain Pir Mohammad.
 32. Messrs. Abdul Aiji Hasam.
 33. Messrs. Saley Mohammad Haji Sulaiman.
 34. Messrs. Haji Tar Mohammad Taif.
 35. Messrs. Haji Tar Mohammad Ayoob.
 36. Messrs. Janoo Husain.
 37. Messrs. Rahmatullah Hajiadam.
 38. Messrs. Vali Mohammad Abdul Latif.
 39. Messrs. Sariffuddin Akbarali.
 40. Messrs. Musaddilal Motilal.
 41. Messrs. Basantlal Munnalal.
 42. Messrs. Khaimraj Badalchand.
 43. Messrs. Parbhudayal Munnalal.
 44. Messrs. Raghuberdayal Durga Pershad.
 45. Messrs. Naraindass Luchmandass.
 46. Messrs. Nanakchand Shadiram.
 47. Messrs. Nihalchand Baldeosahai.
 48. Messrs. Ramjasmul Ramkaran.
 49. Messrs. Ramjasmul Sriram.
 50. Messrs. Ramjiwan Rampertab.
 51. Messrs. Naraindass Gopaldass.
 52. Messrs. Chunnial Heeralal.
 53. Messrs. Maniklal Heeralal.
 54. Messrs. Ramanlal Persotamdas.
 55. Messrs. Ramanlal Baldeodas.
 56. Messrs. Mannilal Mohanlal.
 57. Messrs. Chaganlal Girdharlal.
 58. Messrs. Jiabhai Maganlal.

34. List of furniture-makers (Cawnpore).

1. Empire Furnishing House, Mall Road.
2. Shiva Prasad and Sons, Mall Road.
3. Sohan Lal and Sons, Mall Road.
4. Backer Anson and Company, Mall Road.
5. Nabi Jan and Company, Near Meston Road.
6. Chuna Khan, Near Meston Road.
7. S. C. Lal and Sons, Meston Road.

35. List of brick kilns.

	Outturn. Bricks.
Abdul Rahman, Chandari	250,000
Manzoor Ali, Chandari	300,000
Chandi Behari, Chandari	250,000
Har Din, Chandari	280,000
Hardin and Jagannath, Bibipur ...	1,000,000
Hardin and Jagannath, Shafipur ...	100,000
Kanhaiyalal, Muzaffarpur	250,000
Batla Saheb, Muzaffarpur	200,000
Manna Lal, Muzaffarpur	500,000
Chandi Pershad	100,000
Frizzoni and Company, Gusramau ...	5,000,000
Dildar Bux, Gusramau	1,500,000
Makundimal, Kallyanpur	3,000,000
S. Nazam-ud-din, Kallyanpur	1,400,000
Ford and McDonald, Limited, Tatarpur ...	5,000,000
Girdharilal, Binayakpur	2,000,000
Jagannath Pershad, Binayakpur	500,000
Ishwari Singh, Juhi Kalan	700,000
Pandit Ganesh Dutt, Juhi Kalan	700,000
Ford and McDonald, Limited, Juhi Kalan ...	10,000,000
Gokul Sahai, Juhi Kalan	1,000,000
Manzoor Hasan, Juhi Kalan	1,200,000
Lala Jugal Kishore, Juhi Kalan	1,000,000
Binda Din, Juhi Kalan	1,500,000
Babu Mal Prem Chand, Juhi Kalan	1,500,000
Puranmal Kalka Prasad, Juhi Kalan	1,000,000
Joti Pershad, Kaka Deo	2,000,000
Girdharilal, Kaka Deo	2,000,000
Ram Dass Bhagwan Dass, Kaka Deo	2,000,000
Harnandan Lal, Kaka Deo	2,000,000
Gulam Ali Suraj Prasad, Kaka Deo	2,000,000
Noor Mohammad, Kaka Deo	2,000,000
Dhakan Dass, Kaka Deo	2,000,000
Zamiral Rahman, Kaka Deo	1,000,000
Changamal Roop Narain, Kaka Deo	100,000
Ford and McDonald, Limited, Narainpur ...	4,000,000
Mohd. Fazal, Narainpur	2,000,000
Mamman Lal and Sons, Narainpur	2,000,000

			Outturn. Bricks.
Ala Rakhu, Narainpur	...	...	1,000,000
Fakhruddin, Narainpur	...	...	200,000
Khush Hal, Narainpur	...	...	200,000
Binda Teli, Narainpur	...	...	200,000
Badlu, Narainpur	...	...	100,000
Kalumal, Narainpur	...	...	100,000
Bhagirat, Narainpur	...	...	100,000
Hira Lal, Juhi Khurd	...	...	4,000,000
Gurdin, Juhi Khurd	...	...	2,500,000
Mst. Angni, Juhi Khurd	...	...	2,000,000
Changi Lal, Juhi Khurd	...	...	4,000,000
Joti Prasad, Panki	...	...	3,000,000
Narain Das, Gutaiya	...	...	8,000,000
Frizzoni and Company, Gutaiya	...	...	3,000,000

36. List of lime kilns.

			Outturn. Maunds.
Batta Saheb, Bazitpur	...	...	400,000
Mukta Das, Chandari	...	...	150,000
Ford and McDonald, Limited, Gusramau	...	...	40,000
Dildar Bux, Gusramau	...	...	10,000
Frizzoni and Company, Gusramau	...	...	50,000
Ford and McDonald, Limited, Juhi Kalan	...	...	30,000
Joti Prasad Kaka Deo	...	...	15,000
Gur Din, Juhi Khurd	...	...	15,000
Ram Saroop, Juhi Khurd	...	...	8,000
Munna Mukta Juhi Khurd	...	...	20,000
Pitamber Lal, Juhi Khurd	...	...	10,000
Gopi Mohan, Juhi Khurd	...	...	30,000
Mohammad Bux, Gutaiya	...	...	50,000

37. List of horn comb manufacturers at Baconganj, Cawnpore.

1. Abdulla alias Rais.
2. Imamuddin Khan.
3. Ismail.
4. Amir Khan.
5. Ali Husain.

6. Maula Bux.
7. Asghar.
8. Ahmadulla.

38. List of khajur mat and fan manufacturers.

1. Wali Mohammad, Chatai Mohal, Cawnpore.
2. Gulzar, Chatai Mohal, Cawnpore.
3. Channu, Chatai Mohal, Cawnpore.
4. Manglu, Chatai Mohal, Cawnpore.
5. Jumman, Chatai Mohal, Cawnpore.
6. Dilloo Chatai Mohal, Cawnpore.
7. Shahzade, Chatai Mohal, Cawnpore.
8. Phiku, Chatai Mohal, Cawnpore.
9. Wazir Chatai Mohal, Cawnpore.
10. Sappoo, Chatai Mohal, Cawnpore (original resident of Unao).
11. Nathu, Chatai Mohal, Cawnpore (original resident of Unao).
12. Phiku II, Chatai Mohal, Cawnpore (original resident of Unao).

39. List of tent manufacturers.

1. Mohammad Nisar and Company, Colonelganj, Cawnpore.
2. Shahab-ud-din and Company, Colonelganj, Cawnpore.
3. Cawnpore Dyeing and Cloth Printing Company. Limited Cawnpore.
4. Elgin Mills Company, Limited Cawnpore.
5. Muir Mills Company, Limited Cawnpore.
6. Cawnpore Cotton Mills Company, Limited.
7. Mohammad Ishaq, New Road, Cawnpore.
8. S. Salar Bukhsh and Company, Colonelganj, Cawnpore.
9. Messrs. H. Bevis and Company.

40. List of wooden block makers (for calico printing).

1. Abdul Ghafoor, Colonelganj, Cawnpore.
2. Qadir Bux, Colonelganj, Cawnpore.

CHAPTER VI.

MISCELLANEOUS.

1. Statement of kankar in Cawnpore district.

Tahsil Akbarpur—

Villages where kankar is found.	Thickness of kankar bed.	Remarks.
Bhuwani	... The thickness of kankar bed is about 5 feet.	Kankar is found at places in usar soil. The area where kankar is found is about 180 acres.

Tatra Mau.
 Masahibpur.
 Serai Harpal.
 Naurangabad.
 Kargamun.
 Bhita.
 Sarsi.
 Aseni.
 Pathratha Mandhauri.
 Badhapur.
 Bhujion.
 Bhawan.
 Karik.

Tahsil Ghatampur—

Sadh ... 2 feet.
 Katra
 Jahangirabad
 Sukhapore.
 Barnao.
 Gopalpore.
 Narwal.
 Amaili
 Aliapore.
 Kursedha.

Villages where kankar is found.	Thickness of kankar bed.	Remarks.
Rudauli.		
Bodhanpur.		
Kohara.		
Daulatpur.		
Benda.		
Parachand		
Ranipur.		
Nehura.		
Elanora.		
Palphore.		
Ghazipore.		
Sachauli.		
Kundauli.		
Kula Rampore.		
Biroinghpore.		
<i>Tahsil Bilhaur—</i>		
Hasauli Qaziganj ...	Kankar is generally found from 1 to 1½ feet thick.	Kankar is generally found in layers 1 to 1½ feet thick at a depth of 2 to 4 feet from the ground.
Chitamau.		
Aukin.		
Kishnapur.		
Bheti Hareli.		
Aerwal.		
Hashimpur.		
Sanjti Badhahpur.		
Chaubighi.		
Kudaura.		
Sibmura Dera Shukoli.		
Paliya Buzurg.		
Rangam.		
Daryapur.		
Rajepur.		
Dundua Jamauli.		
Rasulpur Bilhaur.		

Villages where kankar is found.	Thickness of kankar bed.	Remarks.
Ghanau.		
Akbarpur Seng.		
Budhanpur.		
Amiliha		
Malon		
Maharajpur.		
Baidani		
Sandila.		
Munderi.		
Chak Banka.		
Barrajpur.		
Neweda Thati.		
Neweda Daryan.		
Rajpur Sheorajpur.		
Chhataipore.		
Udaitpur Sheorajpur.		
Shahpur Malha.		
Sambharpur Misran.		
Gobindpur.		
Daoidoopore.		
Maryani.		
Chaubepur Kalan.		
Chaubepur.		
Pakhan		
Bhatpurwa Sheorajpur.		
Beraichamau.		
Manpore		
Deurgapur.		
Behta		
Daripathakpore.		
Pajipore Shadipore.		
Bishunpore.		
Bhikharipore.		

2. Statement showing the places where reh is found.

Tahsil.	Village.	Area over which reh extends Acres.
Bilhaur	... Maigu Shampur	... 10
	Munawarpur Bilhaur	... 15
	Rahimpur Bisdhan	... 40
	Maidon	... 45

Tahsil.	Village.	Area over which reh extends. Acres.
Bilhaur—(confd.)	Tishab ...	5
	Babnaj ...	5
	Kishna ...	3
	Khisia ...	3
	Nirada Mitai ...	5
	Anta ...	5
	Kureh ...	10
	Manzampur ...	5
	Halaman ...	50
	Nesra Khera ...	20
	Jariha ...	20
	Udebhaupur ...	25
	Khagpatpur ...	25
	Ibrahimpur ...	10
	Dalelpur ...	5
	Utha ...	50
	Bachhua ...	15
	Chandpura ...	10
	Gundaila ...	10
	Boghpur ...	10
	Imri Nirada ...	8
	Ghaghoo ...	10
	Naoha Nagaon ...	50
	Birhun ...	25
	Kusmara ...	20
	Bargaon ...	15
	Rasoolpur, Rasulabad ...	10
	Mahbubpur ...	15
	Manawarpur, Rasulabad ...	15
	Mulhipur ...	10
	Naila ...	20
	Sakhrej ...	25
	Anti ...	80
	Taktauli ...	50
	Rampur ...	40
	Bhitargaun ...	70
	Kamalpur ...	80
	Bhiti ...	65
	Turna ...	70

Tahsil.	Village.	Area over which reh extends. Acres.
Bilhaur—(contd.)	Kasgawan ...	90
	Kakwan ...	80
	Jhana Hamirpur ...	70
	Ranipur ...	50
	Sajawalpur ...	30
	Harnoon ...	40
	Madaragawan ...	60
	Nigoh ...	8
	Jadeypur Ghasa ...	4
	Biksu ...	5
	Marhamatnagar ...	10
	Bheiti ...	6
	Pura-buzurg ...	4
	Bahrampur ...	4
	Pardhanpur ...	3
	Chaubepur ...	8
	Bhiduri ...	6
	Barrajpur ...	20
	Mundiri ...	15
	Niriadha Kanthi ...	5
	Deokali Sherajpur ...	3
	Kanjti ...	10
	Taqipur ...	18
	Sahjeorah ...	10
	Hanspur ...	5
	Narhupur ...	10
	Hirdeipur ...	5
	Gajainipur ...	8
	Behta ...	13
	Durgapur ...	5
	Indalpore Sheorajpur ...	4
	Jarari ...	5
	Baidarir ...	5
Sandila ...	4	
Keiratpur ...	100	
Bhansana ...	115	
Gauri Abeypur ...	150	
Bansathi ...	50	
Sherpur Bera ...	20	

Tahsil.	Village.	Area over which reh extends. Acres.
Bilhaur—(concl'd.)	Nireada Sakha	... 10
	Ramnagar	... 10
	Rantapur Khurd	... 65
	Jagdishpur	... 5
	Bhaisan	... 75
	Manoh	... 20
	Malaon	... 6
	Markhara	... 10
	Etara	... 115
	Tatarpur	... 90
	Raigopalpur	... 65
	Didanerpur Tasua	... 45
	Randapur	... 45
	Bani	... 40
Pura Partappur	... 25	
Cawnpore	... Panki.	
	Uchti.	
	Tilsahri.	
Ghatampur	... Kakrahia	... 10
	Ratnapur	... 11
	Ramsari	... 10
	Balhapura	... 13
	Barigarhi	... 2
	Sadh	... 3
	Jahangirabad	... 1
Bhognipur	... Sikandra	... 25
	Sankan	... 30
	Alampur	... 40
	Muhammadpur Buzurg	... 40
Akbarpur	... In this tahsil reh is found in 44 villages and the total area extends over 517 acres.	

Statement regarding fibre in Cawnpore district.

Description of fibre.	Quantity.	What marketable commodity is made out of the fibre.	What price do such commodity generally fetch.
1. Bhognipore (tahsil)—Sanai	724 acres	Ropes and patties	Ropes are generally sold at Rs. 2 per rope of 60 yards in length. Patties at Rs. 2-8 per patti of 10 yards in length.
2. Cawnpore (tahsil)—Sann, Sanai and Patson.	708 acres sown yield 2,500 maunds.	Ropes, bags, sutli and tat patties.	Ropes sold at Rs. 9 to Rs. 12 per dozen. Bags sold at Rs. 4 to Rs. 5 Tat patti sold at Rs. 2 per patti of 33 feet in length and 9 inches in width. Sutli sold at 8 annas a seer.
3. Bilhaur (tahsil)—Sanai ..	777 acres, outturn per acre 4 maunds or 3,108 maunds in all.	Sutli	Sold at 8 annas per seer.
4. Ghatampur (tahsil)—Sanai	8,204 maunds	Ropes and tat patties	Ropes 8 annas a seer. Tat patties Re. 1 a seer.
5. Akbarpore (tahsil)—Sanai ..	1,600 maunds	Ropes and sutli and tat patties.	Rupees 2-8 per 3½ seers of tat, 11 yards in length and 1 foot in width.

4. Slaughter-house statement.

	No. of goats.	No. of cows, bullocks, buffaloes, etc.
<i>Tahsil Cawnpore</i> ...	49,129	12,203
„ <i>Bilhaur</i> ...	3,200	4,700
„ <i>Akbarpur</i> ...	1,000	310
„ <i>Derapur</i> ...	...	600
„ <i>Ghatampur</i> ...	...	480

5. Census of (industrial) workers in the district.

1. Cotton ginning, cleaning and pressing ...	3,273
2. Cotton spinning, sizing and weaving ...	12,036
3. Jute spinning and weaving ...	97
4. Rope ...	971
5. Dyeing, bleaching and printing ...	66
6. Lace, crêpe and embroideries etc. ...	157
7. Tanners and curriers etc. ...	5,926
8. Makers of leather articles ...	235
9. Hides, skins and hard materials from the animal kingdom ...	6,164
10. Carpenters, turners and joiners ...	7,276
11. Basket makers etc. ...	2,091
12. Workers in iron and makers of implements and tools ...	9,168
13. Workers in brass, copper and bell metal ...	329
14. Makers of glass ...	161
15. Makers of glass bangles ...	877
16. Potters and earthen pipe and bowl makers ...	4,987
17. Brick and tile makers ...	1,439
18. Manufacturers of explosive material ...	358
19. Manufacturers of dyes, paint and ink ...	18
20. Manufacturers of vegetable oil ...	9,221
21. Manufacturers of paper, cardboard, and paper machine ...	19
22. Rice powders, huskers and flour grinders ...	4,209
23. Bakers and biscuit makers ...	112
24. Grain parchers ...	4,144
25. Butchers ...	2,849
26. Hat, cap and turban makers ...	35

27.	Tailors, milliners, dressmakers, darners and embroiderers on linen	11,730
28.	Shoe, boot and sandal makers	11,448
29.	Washing, cleaning and dyeing	10,888
30.	Lime burners, cement workers	12
31.	Brick layers and masons	2,267
32.	Workers in gas and electric light power	116
33.	Printers, Lithographers and Engravers	221
34.	Workers in precious stones and metals, Enamellers, imitation jewellery makers and gilders etc.	6,920
6. Tariff schedule for various articles exported to foreign countries from the district.		

Raw hides and skins—(1) *Arsenicated and air dried hides—*

- | | |
|---------------------------------------------|-------------|
| (a) Cows (including calf skins) | 5 per cent. |
| (b) Buffaloes (including calf skins) | 5 ,, |

(2) *Dry salted hides—*

- | | |
|---------------------------------------------|-------------|
| (a) Cows (including calf skins) | 5 per cent. |
| (b) Buffaloes (including calf skins) | 5 ,, |

(3) *Wet salted hides—*

- | | |
|---------------------------------------------|-------------|
| (a) Cows (including calf skins) | 5 per cent. |
| (b) Buffaloes (including calf skins) | 5 ,, |
| (4) Goat and kid skins | 5 ,, |
| (5) Sheep skins | 5 ,, |

Import duty on various articles of merchandise.

1.	Hides, skins and leather and leather manufac- tures	15 per cent. ad valorem
2.	Machinery and compo- nent parts thereof	2½ ,, ,,
3.	Dyes and colours and tanning substances	15 ,, ,,
4.	Glass wares	15 ,, ,,
5.	Water lifts, sugar mills and oil presses	Free.
6.	Iron angle	10 ,, ,,
7.	Iron or steel and articles made thereof, including galvanized articles	10 ,, ,,

8.	Silk piece goods from China including Hong Kong	30	per cent.	ad valorem.
8A.	Japanese silk piece goods and cotton and silk mixed	30	”	”
9.	Hosiery	15	”	”
10.	Printing and lithogra- phic material	2½	”	”
11.	Building and engineer- ing materials	15	”	”

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Dehra Dun District

By

M. ZIA-UR-RUB, B.S.c., LL.B.

2



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CONTENTS.

	Pages.
FOREWORD	i-ii
CHAPTER I—	
1. General features	1
2. Area	<i>ib.</i>
3. Population	<i>ib.</i>
4. Trade	<i>ib.</i>
5. Marketing system	1-2
6. Labour difficulties	2
7. Canals	2-3
8. Rivers	3
9. Roads	<i>ib.</i>
10. Fairs	4
11. Railways	<i>ib.</i>
12. Cattle census	<i>ib.</i>
CHAPTER II—	
1. General	5
2. Building material	5-8
3. Chemicals	8
4. Food grains	8-9
5. Forests	9-12
6. Leather	12-13
7. Minerals	13-14
8. Miscellaneous	14-16
9. Other industries connected with edibles	16-17
10. Textiles	17
11. Wood-work	17-19
CHAPTER III.—INDUSTRIAL POSSIBILITIES—	
1. Creosote manufacture	20-21
2. Paper pulp	21-22
3. Cement manufacture	22-25

	PAGES.
4. Essential oils and medicinal herbs ...	... 25-26
5. Glass manufacture ... ..	... 27
6. Match factory ... ..	... 27—29
7. Plaster of Paris ... ..	... 29
8. Tannin extract ... ..	... 29-30
9. Wood tar industry ... ..	... 30—34
CHAPTER IV.—STATISTICS—	
1. Lime manufacture ... ..	... 35-36
2. Other industries connected with edibles ...	... 36-37
3. Wood-work ... ..	... 38-39
4. Miscellaneous ... ..	... 40
CHAPTER V—	
1. Lime manufacturers ... ..	... 41
2. Brick manufacturers ... ..	... <i>ib.</i>
3. Tea manufacturers ... ..	... 41-42
4. Sleeper and timber dealers ... ..	... 42
5. Furniture manufacturers and dealers ..	... <i>ib.</i>
6. Jams and preserve manufacturers ... ..	... <i>ib.</i>
7. General merchants ... ..	... 43
8. Forest contractors ... ..	... <i>ib.</i>
9. Banks ... ..	... <i>ib.</i>
10. Technical schools ... ..	... <i>ib.</i>
CHAPTER VI.—MISCELLANEOUS—	
Inventory of minor forest produce ... ..	... 44—55
Bibliography ... ..	... 56

FOREWORD.

DEHRA DUN is a hilly district with very few industries, but with great possibilities. Of its existing industries only the manufacture of lime deserves mention. The district has an abundance of limestone and only one quarry at Lachhiwala yields more than 60,000 maunds. Limestone is also collected from the beds of the rivers, and more than 10 lakh maunds of limestone is turned every year into lime. Firewood is obtained from the forest or coal is obtained from Bengal for firing kilns. About 7 lakh maunds of lime is annually exported to other parts of the province and the Punjab. There are about 70 firms. A pool of their resources will tend to improve the industry, as with larger capital permanent kilns of a continuous type can be worked ensuring a regular supply and gaining the confidence of the public.

The district grows tea in over 5,000 acres and turns out about 10 lakh pounds every year. This finds employment to about 2,500 souls and brings more than Rs. 5,00,000 to the district. This industry is already organized.

Besides these, a little furniture of wood or cane and bamboo is made in the district.

Amongst its agricultural products Dehra Dun is famous for its Bansmati rice. Out of a total cultivated area of about 99,200 acres, about 22,000 acres is under rice. This is exported in large quantities to various parts of the country, and Dehra Dun ought to have a rice mill. Wheat is grown in about 35,000 acres and over 3 lakh maunds is available annually. The rice mill can also combine with it the business of wheat grinding. Rape, mustard, sesamum and other oilseeds are grown in over 6,700 acres and are available to the extent of about 75,000 maunds. The census of 1911 returned only 123 male and 157 female actual workers in "the manufacture and refining of vegetable and

mineral oils." With an average of 12 seers a day these cannot consume more than 5,000 maunds oilseeds in 8 months for which a *teli* ordinarily works on the *kolhu*. To crush the rest, rotary *ghanis* ought to be put up in a central place. The distillation of grasses for essential oils or the manufacture of tinctures and essences from medicinal herbs and drugs should be started after an investigation has been made about their contents by the Industrial Chemist to Government. The Technological Institute should take up the work.

The chances of a match factory are said to be favourable these days. Bengal and Bihar have led by the imposition of heavy import duty on imported matches, started manufacture of matches and also the machinery for match making. Some of the machinery makers guarantee to supply expert labour also. It would be worth while deputing some officer of the department to look into their working before any opinion could be expressed about these machines. The Superintendent's suggestions about the manufacture of charcoal deserve further experimentation along the suggested lines so that the commercial possibilities of the process may also be investigated. The Technological Institute should take up this work also.

The report deals extensively with the possibilities of the district, and attached to it will be found an inventory of the minor Forest products of the district. It is prepared with the help of Mr. Robertson of the Imperial Forest Institute at Dehra Dun. We are much indebted to him for his valuable assistance, without which it would have not been possible to compile it. Thanks are also due to Mr. S. T. Gadre, the Industrial Chemist to Government, United Provinces, for his revising and improving the report with his suggestions as well as to the following gentlemen who have helped the Superintendent in his work :—

A. M. Abbasi, Esq., Consulting Engineer of the late Thymol Factory, Doiwala.

Ugra Sen, Esq., BAR.-AT-LAW, M.L.C., Dehra Dun.

B. K. Ghare, Esq., Agricultural College, Cawnpore.

CHAMPA RAM MISRA.

The 6th March, 1923

CHAPTER I.

INTRODUCTION.

1. General features of the district.

Boundaries.—

North.—Himalayas.

South.—Siwaliks.

East.—The Ganges.

West.—The Jumna.

The district is divided into two natural divisions: (1) the Dun proper, (2) the Jaunsar Bawar. The Dun is an open valley between the Siwaliks and the outer Himalayas and is sub-divided into Eastern and Western Duns. Jaunsar Bawar is the hilly tract between the Sirmoor and Tehri states.

2. Area.

Total area is 1,189 square miles; under cultivation 151 square miles and the rest covered by hills and forests.

3. Population

In 1921 the population was 212,243.

4. Trade.

(a) *Export.*—The district exports timber, bamboos, lime, limestone, charcoal, catechu, rice (bansmati), potato, sugarcane, tea, munj and bhabar grass to the plains. Tea, timber, lime and limestone are the chief articles of export.

(b) *Import.*—The imports include all sorts of hardware, woollen and cotton piece goods, salt, sugar, food grains, tobacco, dried fruits, spices and sheep.

5. Marketing system in the hills.

The hillmen of Jaunsar Bawar still lead a primitive life and favour barter transactions. They cultivate land, keep their

own sheep and are self-contained. When the rainy season is over they come down to sell their hill produce such as rice, spices, turmeric, onions, pepper, ginger, *salajit*, *gulbanafsha*, walnuts, apricots, honey, wax, lac, gum, resin and *ghi*, and purchase in exchange hardware, cloth, salt and other things. The largest market for such transactions is the annual fair held in the month of *Kartik* in the state village of Bushair.

6. Labour difficulties.

The recruitment of efficient and skilled labour is a matter of serious difficulty in the district. The coolie labour is scarce. The artisans are not so skilled as their friends in the plains and yet demand a high wage on account of the high prices of the necessities of life. The construction of Imperial works has made the problem more difficult and serious. All sorts of labour are required for the works, and this extraordinary demand has made labour very mobile. Important concerns and cautious employers therefore import permanent labour from the plains. Even these leave service at any moment without notice. The advance system has proved to be of no avail. The following are the daily wages prevalent in Dehra :—

Carpenter, Rs. 1-8-0 to Rs. 2-4-0.

Mason, Rs. 1-8-0 to Rs. 2-8-0.

Blacksmith, Rs. 1-12-0 to Rs. 2-4-0.

Coolie 12 annas.

The Forest department is establishing forest villages by importing labour from the plains on certain privileges for cultivating forest lands. Should this scheme succeed, the scarcity of labour will be removed.

7. List of canals.

- | | |
|-------------------------------------|--------------------------------------------------------------|
| 1. The Eastern Dun canal ... | } The two branches of Rajpur canal from the Mussoorie hills. |
| 2. The Western Dun canal ... | |
| 3. Bijapur canal from Guchchu Pani. | |
| 4. Katapathur canal from the Jumna. | |
| 5. Raipur canal from the Song Nadi. | |

DEHRA DUN DISTRICT.

6. Jaklum canal from the Jaklum Nadi.

These are local for the Eastern and the Western Dun parganas.

8. List of rivers.

- | | |
|----------------|---------------|
| 1. The Ganges. | 3. The Suswa. |
| 2. The Asan. | 4. The Jumna. |
5. The Western Tons.

9. List of roads.

First class metalled roads, bridged and drained throughout.

	Length in miles.
1. Ghaziabad-Meerut-Roorkee and Landaur Trunk road	14
2. Dehra-Fatehpur portion of Rampur-Mandi road ...	21
3. Saharanpur-Chakrata hill road ...	7
4. Dilaram bazar-Hath and Cantonment road ...	2
5. Doiwala and Harrawala railway station roads ...	½
6. Dehra and Hardwar road ...	12

Second class unmetalled roads, bridged and drained throughout.

1. Ghaziabad-Meerut-Roorkee and Landaur Trunk road through Landaur Cantonment ...	1
2. Ghaziabad-Meerut-Roorkee and Landaur Trunk road, Rajpur to Landaur ...	8
3. Hardwar-Badrinath road ...	17

Landaur-Kumaun road.

4. Landaur to Tehri boundary at Baranskand ...	11
------------------------------------------------	----

Mussoorie-Simla road.

5. Mussoorie via Chakrata to Jaunsar boundary ...	86
6. Chakrata to Tons at Sangota bridge ...	24

Second class unmetalled roads, partially bridged and drained.

1. Dehra-Hardwar road ...	18½
2. Dehra, Kaonli and Sahpur road ...	3½
3. Dilaram bazar to Cantonment ...	1
4. Fatehpur-Rampur Mandi road ...	4

10. List of fairs

Name of fair.	Locality.	Date.
Basant Panchmi	... Rikhikesh	... January.
Holi	... Rikhikesh	... March.
Dikauti	... Rikhikesh	... April.
Jhanda	... Dehra	... March.
Basanti Debi	... Raiwala	... June.

11. Railways.

Hardwar-Dehra Railway managed by Oudh and Rohilkhand Railway is the only railway line in the district, having stations at Dehra Dun, Harrawala, Doiwala, Kansrao and Rikhikesh road. Total length is about 28 miles.

12. Cattle census (year 1920).

Bulls	...	...	...	417.
Bullocks	...	...	...	44,226
Cows	...	...	...	51,150
Calves	...	...	...	46,618
Buffaloes	...	...	...	735
She-buffaloes	...	...	...	12,442
Young buffaloes	...	...	...	7,514
Sheep	...	...	...	31,656
Goats	...	...	...	53,688

CHAPTER II.

DESCRIPTION OF, AND SUGGESTIONS FOR, THE IMPROVEMENT OF THE
VARIOUS INDUSTRIES OF THE DISTRICT.

1. General.

Dehra Dun is a rural district of modern growth and habitation. Dehra Dun and Mussoorie have attracted some population from the plains due to the healthy climate of the hills, but the standard of living is rising and there is prospect of development of industries to meet the growing demand.

The only industries carried on on a large scale are the manufacture of tea and lime. Furniture, baskets, moonchas and chairs of bamboo and cane are also made on a considerable scale. Rice husking, wheat grinding, weaving and the manufacture of boots and shoes, jams and preserves and dairy produce are carried on on a very small scale.

2. Building material.

Lime.—The manufacture of lime is the chief industry of the district. Lime sells at Rs. 75 per 100 lime maunds of 60 seers each, i.e., 8 annas per standard maund. The industry is concentrated along the banks of the Richpana river and mostly the kilns situated there have a capacity of 2,000 maunds each. Kilns in the rest of the district have a capacity of 250 maunds each.

Raw material.—The district abounds in limestone which is generally composed of calcium carbonate, magnesium carbonate, clay and silica, and in firewood. One limestone quarry is worked in Lachhiwala Forest range under a licence from the Forest department. Limestone boulders are collected from or dug out of the river beds and banks, where they are brought by torrents from the hills. One quarry of limestone is worked at Lachhiwala under a monopoly lease from the Forest department, and another will be worked when the Lachhiwala quarry is exhausted.

Leases for collection or excavation of limestone in the river beds are given away by auction. Petty contractors pay royalty

to these lessees and bring stones to the kilns where they are piled in *chattas* or piles 10'×10'×1', i.e., 100 c. ft. containing about 150 maunds of stone. The price of a pile varies from Rs. 18 to Rs. 28 according to the distance of the kiln from the place of collection or quarry. This price includes the charges of collection, transport and piling.

Coal dust is purchased through the coal agency at the railway station at Rs. 10 a ton and carted to the kiln at Re. 1 per cart with a load of about 15 maunds. The price of coal at the kiln is thus a little less than Rs. 12 per ton.

Firewood is purchased from the jungle at 5 to 7 maunds per rupee. The price at the kiln is about 4 maunds per rupee.

Process of manufacture.—There are two processes: (1) burning in the over-ground kilns, and (2) the under-ground kilns.

(1) *Over-ground kiln.*—A high cylindrical kiln is built near the river bank, leaving holes for passage of air in the sides near the bottom of the kiln. Limestone boulders which if bigger are broken by hammers, and coal or firewood are put in alternate layers up to the top which is closed by limestone boulders. As this is not a continuous process lime is taken out only after the whole of the fuel in the kiln has burnt away; 150 maunds of limestone are burnt with 50 maunds of firewood or about 28 maunds or one ton of coal. The yield of lime is more than two-thirds of limestone. Thus 150 maunds of limestone give a little more than 100 maunds of lime. This process is followed in Dehra Dun at Richpana river.

(2) *Under-ground kiln.*—This process is followed elsewhere in the district. A deep pit like a semi-circular cavity is dug in the ground and a narrow air-passage is left to promote burning. Limestone is put at the bottom and firewood above. Such kilns are mostly of 250 maunds capacity. No coal is used. The whole process beginning from the collection of stones to the burning of lime takes about 8 days. The kilns yield less lime than the over-ground ones.

Annual outturn of lime.—The district has 15 kilns of 2,000 maunds lime capacity each, 30 kilns of 250 maunds each, and

25 kilns of 100 maunds each. The first ones are burnt ten times in a year and the second and third 40 times. The annual outturn of lime is 700,000 maunds.

Export.—The export of lime and stone from Dehra station was 530,970 maunds in 1921-22. About three-fourths of this quantity would be lime. Thus the export of lime from Dehra was 393,228 maunds. The export of lime and stone from Doiwala was 95,188 maunds. About one-fourth of this would be lime, hence the quantity of lime exported must be about 23,797 maunds. The total export of lime from the district is thus estimated to be about 422,025 maunds. Lime goes to the plains.

Local consumption.—The annual local consumption is estimated to be about two lakh maunds. Dehra lime is securing a bad name owing to the unfair dealings of some manufacturers and middlemen.

Estimated calculations of working a kiln.—Capacity 2,000 maunds :—

	Rs.
1. Stone 3,000 mds. or 20 <i>chattas</i>	400 at Rs. 20 a <i>chatta</i> .
2. Twenty tons of coal (one wagon) 200 at Rs. 10 a ton.	200
3. Carting charges of coal from the railway station to the kiln (40 trips)	40 at Re. 1 per trip,
4. Establishment charges and labour	160
Total cost	800
Lime obtained ..	... 2,000 standard maunds.
Price of lime ...	... 1,000 at 8 annas a standard maund.
Estimated profits ...	... 200

The kiln is usually burnt ten times in a year, thus the annual profits of such a kiln would amount to about Rs. 2,000. Transactions are conducted through weighmen locally called *Tullaiyas*.

Suggestions for improvement.—(1) Fair dealings both on the part of the *Tullaiyas* and the manufacturers are of utmost importance.

(2) The burning of lime is carried on the old crude system. The introduction of Bull's pattern kilns as are in use in the Civil Engineering College, Roorkee, will increase the yield and give a constant supply of lime. It is said that a constant supply kiln was once tried, but the quality of lime produced in it was not good. The inferior quality must be due to some defect in the structure of the kiln which requires the use of fire-bricks and considerable skill.

3. — Chemicals.

Thymol.—During war the Dixon Chemical Company at Doiwala exported thymol on a very large scale. The factory has now been closed on account of unfavourable foreign exchange rates and some private causes. The machinery has been sold by the proprietor to the Gwalior State. The exchange rates being favourable now, the manufacturing chemist, Dr. Khudadad, is thinking of starting the business again if financial help is forthcoming.

4. Food grains.

The district is mostly covered with hills and forests, hence the agriculture is small and laborious. Rice (bansmati) and wheat are the chief crops. The district is well watered and irrigated due to a number of streams and canals. Both late and early rice are grown. The total area under cultivation is 95,429 acres.

Statement showing the area and production of the principal crops during the year 1329 Fasli.

<i>Kharif and Zaid crops.</i>			<i>Rabi crops.</i>		
Name of crop.	Area under each crop.	Produce in maunds.	Name of crop.	Area under each crop.	Produce in maunds.
	Acres.			Acres.	
Badhain or Quarry (early rice).	4,198	50,476	Wheat	29,251	292,510

DEHRA DUN DISTRICT.

9

Kharif and Zaid crops.			Rabi crops.		
Name of crop.	Area under each crop.	Produce in maunds.	Name of crop.	Area under each crop	Produce in maunds
	Acres.			Acres.	
Jarhan or Aghany (late rice).	14,201	170,412	Wheat and gram.	182	910
Mucca (maize)	8,063	96,726	Wheat and barley.	362	1,448
Urd-Moong ...	1,740	13,920	Gram ...	3,780	37,800
Others, e. g.. Lobia and dals.	4,952	29,712	Muttar (pea)	437	496
Cotton ...	238	320	Linseed ...	36	180
Juar-Chari ...	6,508	35,540	Rape and mustard.	1,173	46,925
Sugarcane ...	2,639	88,706	Other oilseeds	1,723	6,892
Til (sesamum)	3,708	14,802	Barley ...	4,993	74,895

Of other crops mention may be made of a little indigo 3 acres, tobacco 41 acres, potato 143 acres, masur 606 acres, and the Zaid crops of Mandwa and Sawan, the area under which is always fluctuating.

Rice husking.—As a subsidiary work some rice husking is done in the Bulbir flour mills at Dehra. Most of the rice is husked by village women engaged on daily wages at 8 annas a day.

Wheat grinding.—There are two flour mills at Dehra :—(1) the Bulbir mills in Paltan Bazar, and (2) the Himalaya mills near tahsil, but fine wheat flour is imported from Delhi and Ambala. Besides the above, there are two more small mills worked by the canals, one near Rajpur and the other in Dehra proper. Figures for the same were not available, but it is seen that the local demand is supplied.

5. Forests.

The forests of Dehra Dun covering a total area of 178,600 acres are divided into two divisions :—(1) Dun and (2) Chakrata division.

(a) Statement showing the forest produce available annually from the Dehra Dun Forest division.

No.	Name of product.	Approximate annual yield.	Rate in forests.	Industry in which it is utilised.	System by which it is sold, cut or removed.	Remarks.
1	Sal timber ...	480,000 c.ft.	8 annas to 10 annas per cubic foot.	Building and railway sleepers.	By contractor's agency.	Available at a height of 4,000 feet.
2	Sain ...	56,000 ,,	4 annas to 6 annas per cubic foot.	Ditto ...	Ditto.	
3	Haldu ...	3,000 ,,	2 annas to 4 annas per cubic foot.	Building and combs.	Ditto	
4	Miscellaneous...	51,000 ,,	1 anna to 4 annas per cubic foot.	...	Ditto.	
5	Barks (sal) ...	10,000 mds.	2 annas per maund.	...	Ditto ...	Generally given to carters free of charge. Bark from young poles can be used for tanning.
6	Fibres of all kinds.	1,000 ,,	4 annas per maund.	...	Petty sale	Maljhan fibre is often used locally for ropes, but is inferior to jute or munj.

7	Thatching grass	Could not be estimated.	...	...	By contractor's agency.	
8	Bhaber grass ...	Ditto ...	...	...	Ditto ...	Generally exported to the plains and used locally to a certain extent.
9	Honey ...	10 mds.	...	...	Ditto ...	Exported to the plains.
10	Wax ...	...	...	...	Ditto ...	Ditto.
11	Limestone ...	25,000 mds.	Rs. 32 per 100 mds. of lime, i.e., per, 150 maunds of 40 seers.	...	Ditto ...	Exported to the plains and used locally to a certain extent.

DEHRA DUN DISTRICT.

(b) Available raw material from Chakrata Forest division.

The following amounts of wood were extracted in the period 1st April, 1921 to 31st March, 1922:—

Timber.	Height where available.	Quantity.
1. Deodar (<i>Cedrus Deodara</i>).	7,500 to 8,500 feet.	812,613 c.ft.
2. Chir (<i>Pinus Longifolia</i>).	Pine 3,000 to 6,500 "	905,093 "
3. Blue (<i>Pinus Ec-celsa</i>).	Pine ...	375,412 "
4. Firs (Fir).	(Spruce 4,000 to 8,000 and Silver and 9,000 feet.)	280,252 "
5. Oak (<i>Quercus spp.</i>).	Ditto	3,752 "
6. Sal (<i>Shorea robusta</i>).	...	207 "
7. Miscellaneous	...	433 "

Mour (*Quercus dilitata*), Kharshu (*Quercus semi-carpifolia*) also are available at heights varying from 6,500 to 9,000 feet.

The principal minor produce is the Ringal or hill bamboo (*Arundinaria falcata* and *Arunaxnrix apathiflora*). The stems 1 to 2 inches in girth are cut into 5 feet lengths and exported to the plains for the manufacture of hooka pipes, baskets and fishing rods. The amount exported in 1921-22 was 888,000 ringals.

Selected blocks of forests or the timber to be cut is sold either on monopoly cum royalty system or on lump sum contracts. The auction is held annually in September at Dehra Dun. The Dun division working plan publishes a list of the forest produce to be removed or cut. No list is published by Chakrata division. Copies of the rules and other information can be had by applying to the Divisional Forest officers concerned.

6. Leather.

Boots and shoes.—A few small factories and Chamars make ordinary boots and shoes for local use from leather imported from Cawnpore and National Chrome Tannery. Shoes are made to order. Europeans are the usual customers.

The work is of very ordinary type and needs no elaboration.

The daily wages of chamars are from Re. 1 to Rs. 1-12-0 a day. The prices of shoes vary according to the quality of leather used, i.e., about Rs. 3 to Rs. 5-8-0 for a shoe made of bark tanned leather; Rs. 4-8-0 to Rs. 7 that of chrome tanned leather.

Ladies shoe is sold from Rs. 4 to Rs. 8 a pair. Attempts are being made to manufacture high class shoes in the Dehra Shoe Factory at Dehra Dun.

7. Minerals.

The following minerals are found in the district :—

Class.	Name.	Places where found and remarks.
(a) Stone ...	Carbonate of lime CaCO_3 .	Siwaliks and all river beds. Almost all over the district.
	Selenite ...	Siwaliks and around Rajpur in the form of translucent crystals of gypsum.
	Iron pyrites ...	Siwaliks.
	Calcareous tufa	Mussoorie range.
	Calcareous spar	Mussoorie range—in white, brown and yellow colour.
	Sulphate of barytes.	Mussoorie range.
	Silica in the form of sand.	Ditto.
(b) Metals...	Iron ore, hematite.	(1) Around Kalsi, (2) between Kuanoon and Minus, (3) Bersar, (4) Lohari, (5) Gaski. In small quantities near the entrance of the Jumna from the mountains and Mussoorie range.
	Copper ore ...	In Jaunsar-Bawar near Kalsi and Punaba.
	Lead ore ...	Jaunsar Bawar (not yet exploited).
	Antimony ore	Baula in Jaunsar Bawar (not yet exploited).
	Zinc ore ...	Palan in Jaunsar Bawar (not yet exploited).
	Gold ...	Fine particles of gold are mixed in the sands of the Jumna and are collected by the hillmen.

Chakrata hills seem to be rich in minerals, but the rocks are all sedimentary and of comparatively recent origin, therefore unlikely to yield iron and other minerals, with the exception of limestone, in commercial quantities. Colonel Fisher tried in recent years to work the mines for iron, but failed, due to labour difficulties. As the Forest department is opening forest villages to recruit labour, an attempt should again be made to see whether Colonel Fisher's hopes to work the mines for other minerals can be realised.

8. Miscellaneous.

(a) *Fishing*.—The rivers of Dehra abound in fish, but the destructive method of catching with dragging nets adopted by the careless poachers of Dehra is detrimental to the industry. The Dehra Dun Fishing Association at Mussoorie is trying its best to protect by all means the small fish. It has taken on lease all Government rivers running through reserved forest areas and some parts of private rivers too. Fishing is allowed with rod and line only. *Mahisher* of 1 lb. and over, trout of $\frac{1}{2}$ lb. and over are allowed to be kept. Small fish are to be returned to water if caught. The Forest department looks after the rivers for the members of the Association. In spite of all this, the ruthless poacher destroys the fish stealthily by cast nets and drag nets at night when the forest guards are not particular about their watch.

Kinds of fish.—*Mahisher*, *Murrel* (*Sauli*), *Kalabana*, speckled trout and *Chilwa* are commonly found.

Price.—The price varies according to the quality of the fish and the season, being dearer in winter; it ranges from 4 annas to Re. 1 per seer.

Close time and sanctuaries.—There is no necessity of any close time or sanctuary as fishing is allowed with rod and line only.

Enemies of fish and the means of protecting fish from them.—The chief enemies of fish in Dehra are: (1) Otter which can be got rid of by trapping, (2) Northern-driver which can be shot; (3) the ruthless poacher of Dehra Dun who destroys the

fish without any care or distinction between the grown up and small fish.

Suggestions for protection and improvement.—(1) Some means should be adopted to prohibit and stop poaching in any form in Dehra. If not in all rivers, it should be prohibited at least in the minor rivers of Dehra as they are the sources of the supply of fish for the bigger rivers and thence for the plains. Such minor rivers are Song, Suswa, Ason and Rehi. The local administration can easily proclaim such prohibition.

(2) *Fish ladders.*—*Mahisher* chiefly come up from the main rivers into the subsidiary streams. To increase fish they should be protected from being ruthlessly slaughtered in their breeding grounds. To allow fish free access into subsidiary streams all weirs and bunds in the bigger streams, i.e., the Ganges, the Jumna and their canals, should have fish ladders.

(b) *Jail industries.*—*Munj* ban twisting, (2) *munj* mat weaving, (3) *durries*, (4) *garah* cloth, (5) *dusters*, (6) *dusooti* for jail use only.

Number of prisoners engaged in each.—*Munj* ban twisting, 22 prisoners daily, (2) *munj* mat weaving, 15 prisoners daily; (3) *durries*, 3; (4) *garah* cloth and *dusooti*, 3.

Daily outturn.—(1) *Munj* ban, 300 yards per head, i.e., 6,600 yards in all; (2) *munj* mats 8'×2' per head, i.e., 120'×2' in all; (3) ordinary *durrie* 7'×4' per head, striped *durrie* 6'×4' per head, (4) *dusooti*, 24 feet per head, (5) *garah* cloth 3'×12' per head.

Expenditure and profits.—Raw materials purchased in 1921-22 for all the industries was worth Rs. 1,763. Gross income was Rs. 3,820. Cash profit was Rs. 2,057.

Marketing system.—*Munj* is obtained from Kasganj through a contractor and yarn from Cawnpore. Articles are made to order.

Looms.—Ordinary hand-looms are in use. No fly-shuttle is introduced.

Dimensions of the manufactures.—*Dusooti* 30 or 31 yards long and 28" wide; *garah* cloth, 30 yds. × 1 yd. *dusters* 28"×28". *Munj* mats are made according to the measurements given in

an order. The full piece of dusters is 30 yards long with dividing strips 28 inch apart.

Suggestiona.—The district being rich in oil-seeds, a small oil mill can profitably be introduced in the jail.

9. Other industries connected with edibles.

(a) *Dairy produce.*—Butter for local consumption is made in three small dairies and by a few milkmen. The production is not sufficient to meet the local demand. Milk is imported from the local station of Kansrao and sells at 5 annas a seer, butter at Rs. 1-8-0 per pound.

(b) *Jams and preserves.*—A small amount of jams and preserves is manufactured for local consumption from the hill fruits by about 15 men at Mussoorie and Dehra. The process of manufacture consists in boiling the fruit in water and then preserving them in a boiled saturated solution of sugar.

Prices.—Strawberry 14 annas per pound; Apricot, Gooseberry, Damson, Peach, Plum, Pear, Apple, Orange marmalade 8 anna a pound; Guava jelly 10 annas a pound; Mango chutni, Tomato sauce and chutni Rs. 1-8-0 per bottle (quart) and Rs. 1 per half bottle. The preserves are usually sold in 2-lb. air-tight tins.

(c) *Tea.*—Tea industry in Dehra Dun is already organized. The best plantations are mostly under the supervision of European managers. The total area under tea in 1921 was 5,002·84 acres; out of this 4,908·84 acres were actually plucked, yielding about 1,000,000 lbs. Thus the yield of manufactured tea per acre comes to about 200 lbs. if an allowance is made for the area plucked in Asanbag whose figures were not available. In 1920 the price of tea was exceedingly low, as there was little export. Stocks accumulated in England due to incomprehensible depression of tea market and the stoppage of trade with Russia. The industry would thus have suffered considerably had not a market for green tea been opened at Amritsar. The foreign market has now become favourable and an improvement in the manufacture of black tea is expected this year.

There are at present 24 tea gardens in Dehra, the biggest being owned by the Dehra Dun Tea Company, the East Hope Tea

Company and the Maharaja of Sirmoor State. The process of manufacture is not described here, as it is given in so many books on tea plantation and manufacture.

The spring season plucking gives better leaves and finer tea than the rainy season plucking. In Dehra women are better, swift and more skilled pluckers than men. A plucker earns from 10 annas to Re. 1 a day at 4 pies per pound. The permanent labour employed in the factory is usually recruited from amongst the ryots of the planter on 8 annas to 10 annas a day with certain privileges like free grazing for one or two cattle and one pound of coarse tea per week free of charges.

10. Textiles.

Cotton.

Weaving.—The weaving of *garha* with fly-shuttle looms has recently been started by a small capitalist at Dehra. The industry is still in its infancy. Some hillmen of Jaunsar Bawar weave coarse blankets for their own use.

11. Wood-work.

(a) *Bamboo and cane furniture and chiks.*—The use of mixed cane and bamboo furniture is becoming very popular in Dehra and Mussoorie as it is very light, tolerably durable and comparatively cheaper than the wooden furniture. Chairs and baskets are more costly than those of the same quality made at Allahabad. Chiks are astonishingly dear, being usually 2 annas 6 pies per square foot. The industry is confined to Dehra City. The demand for this furniture is sufficient for the present supply though the manufactured articles cannot compare with the foreign ones in quality.

Description of the articles.—(1) *Chairs.*—Low easy chairs are made in various designs, with seats and backs of cane and sides and supports of bamboo. Price varies from Rs. 3-8-0 to Rs. 7 according to workmanship. An ordinary easy chair is sold at Rs. 4. More expensive chairs are usually dyed blue or green.

(2) *Baskets*.—Ordinary tiffin baskets are made of various sizes, e. g., 1'6" × 1' × 8", price Rs. 1-8-0, 2' × 1'4" × 10", price Rs. 2. The price varies from Re. 1 to Rs. 3-8-0 according to size. The price of packing baskets varies from 3 to 8 annas. Waste paper baskets cost according to workmanship. A jar-shaped basket is sold for Rs. 1-8-0.

(3) *Chiks*.—Both coarse and fine chiks are made of bamboos dyed blue, green and yellow with ends lined either with niwar or stout *garha* cloth dyed black or fast blue. The price varies from two to three annas a square foot.

Calculations of cost price and profits.—(1) A pair of easy chairs worth Rs. 10, i. e., Rs. 5 each, costs as follows:—Cane Rs. 1-8-0, bamboo 12 annas, colours 1½ tola 4 annas, wages for 5 days at Rs. 1-4-0 a day, Rs. 6-4-0. Hence total cost amounts to Rs. 8-12-0. Retail selling price is Rs. 10, hence profits besides daily wages are Rs. 1-4 per pair or 10 annas per chair.

(2) *Chiks* 7½' × 4½'. i. e., 34 square feet, costs as follows:—Bamboo 12 annas, colours one tola 3 annas, *garha* cloth 1½ yards at 8 annas a yard 12 annas, thread 6 annas, wages for 2 days at Rs. 1-6-0 a day Rs. 2-12. Hence total cost comes out to be Rs. 4-13-0. Selling price at 2 annas 6 pies per square foot is Rs. 5-5-0. Hence profits besides wages are 8 annas.

Marketing system.—The articles are either made to order or sold to dealers. The dealers advance money to the manufacturers on the prevalent advance credit system. They get the articles on a lower price than is given by a casual customer and thus get a profit of about 4 annas a rupee.

(b) *Wooden furniture*.—The manufacture of furniture is carried on in the district on a small scale. The following causes stand in the way of its expansion:—

- (1) Competition with Bareilly on account of the high wages demanded by the artisans of Dehra, local furniture is thus dearer than that of Bareilly.
- (2) Use of lighter and cheaper furniture made of bamboo and cane.

- (3) The prevalence of the hire system due to the mobile population of the place. The retail sale of wooden furniture is not more than Rs. 1,000 per month in value.

The following are monthly rates at which furniture can be hired :—

Ordinary or office chairs 8 annas, easy chair Re. 1, teapoy 8 annas, table Rs. 1-8-0, almirah Rs. 2 to Rs. 3, bed Re. 1-8 to Rs. 3, commode Re. 1. The income from hire greater in winter season when the gentry comes down from Mussoorie to Dehra.

Estimated cost of production and profits.—(1) A fancy armless chair with American seat of superior quality costs as follows :—Shisham wood $\frac{1}{2}$ c. ft. at Rs. 3 per c. ft. Re 1-8, American wooden seat Rs. 1-4-0, sawing charges of shisham wood 8 annas, polishing charges Rs. 3, carpenter's charges for 3 days Rs. 5, hence total cost is Rs. 11-4. Establishment charges including profits calculated at 25 per cent. of the cost are Rs. 3-1. hence selling price is Rs. 14-5. The factory owner sells it between Rs. 14 and Rs. 15.

(2) Ordinary armless chair costs as follows :—Shisham wood $\frac{1}{2}$ c. ft. Re. 1-8, carpenter's charges Rs. 3, turning charges 8 annas, polishing charges Rs. 2-4-0, cane seat 12 annas, hence total cost is Rs. 8. Establishment and profits at 25 per cent. Rs. 2, hence selling price is Rs. 10.

(3) Table 4' x 3' without drawers—Tun wood Rs. 8, carpenter's wages Rs. 5, polishing charges Rs. 4-8-0, total Rs. 17-8. Establishment and profits at 25 per cent., hence selling price is Rs. 21-14-0.

Suggestions.—It has been stated above that on account of the scarcity of efficient labour and the high wages demanded by the artisans, Dehra cannot compete with the established market of Bareilly. But it abounds in raw material, and if the above difficulties be solved Dehra can become a great centre of furniture manufacture. Perhaps the establishment of forest villages will remove much of the labour difficulty.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

The district is rich in raw materials. Naturally it seems that it is full of industrial possibilities. The presence of raw material is not the only factor in the starting or development of an industry or manufacture. The presence of expert labour and the transport facilities are of no less importance. Industrial enterprise has to face serious difficulties where there is scarcity of labour, skilled or unskilled. Dehra Dun presents many such difficulties. Heavy transport charges, long distances from the railway and absence of ready market for sale are other impediments to easy development of industries and trade. These should all be removed, if industries are to develop. An attempt is made below to deal with the utilization of only those raw materials which are available in sufficient quantities and are found in the accessible parts of the district.

1. *Creosote manufacture*.—Deodar and sal, two valuable and chief timbers of Chakrata and Dehra Dun Forest divisions, are at present mostly used for railway sleepers. Deodar is much too useful a wood to be used for this purpose. * Better use and market should be found for deodar. Creosted pine, firs and sal should be utilized for sleepers. Sleeper creosoting, if started in the district, will fulfil this object and be surely a profitable concern.

Available raw material—(1) Sal—The approximate annual yield of sal from the Dehra Dun Forest division is 450,000 c.ft.

(2) Chir Pine—905,093 c.ft.	} Extracted from the Chakrata division during 1921-22.
(3) Blue Pine—370,412 „	
(4) Firs (Spruce 280,252 „ and Silver).	

N. B.—Spruce and silver fir find a better use in the manufacture of match splints and boxes, also in the paper pulp industry, hence both these woods should be reserved for the same. We are then left with sal and chir which are available in quantities more than sufficient for creosoting.

Market.—There is ample market for creosoted sleepers in Indian Railways. Demand from Oudh and Rohilkhand Railway alone for sal sleepers was for 30,000 sleepers from Dehra in 1921-22. These would be worth Rs. 82,500 at Rs. 2-12-0 each. Other railways would also be willing to buy creosoted sleepers which are said to last much longer than ordinary sleepers.

Place of location of the factory.—Sal is obtainable from Dehra Dun division and chir from Chakrata division. There should thus be two factories: one at Dehra Dun or Doiwala for creosoting sal, and the other at Dakhpathur for creosoting chir sleepers. Dakhpathur is the first chowki where timber floated in the Jumna from the Chakrata forests is caught.

2. *Paper pulp.*—The consumption of paper throughout India is rapidly increasing. The annual consumption of paper in India is on an average about 1,10,000 tons, out of which about 80,000 tons are imported and only about 30,000 tons are produced in the country. Import of paper in 1920-21 amounted to Rs. 7,34,00,000 and in 1921-22 to Rs. 2,34,00,000 in value. The amount of paper pulp imported in 1920-21 was Rs. 44 lakhs in value and in 1921-22 was Rs. 50 lakhs. Dehra Dun and Saharanpur forests can supply enormous quantities of bhaber grass, Himalayan spruce, silver fir and bamboo which all produce good paper pulp. At present only one paper mill exists at Lucknow in these provinces. There are good prospects for paper pulp mill. The question will be discussed in the Saharanpur district report as the proper place for such a mill is Jwalapur (Saharanpur).

Raw materials.—(1) *Firs*—The quantity extracted in 1921-22, from the Chakrata forests was 280,252 c.ft. It is believed that this quantity can be increased to 1,500,000 c.ft., if demand increases.

(2) Bhaber grass and bamboo are available in enormous quantities.

Quality and yield of pulp from firs.—(1) Spruce when subjected to the chemical process yields an excellent cellulose free from dirt and impurities. The pulp is excellent as the fibre is long, tenacious and of good colour. The consumption

of bleaching powder is not much. The yield from air dry wood is 42 per cent.

(2) *Silver Fir*.—This requires more drastic treatment than spruce when boiled with caustic soda. The quality of pulp is good and thoroughly suitable. The consumption of bleaching powder is greater than in the case of spruce but the yield is 45 per cent.

Quantity of pulp that can be produced annually.—The estimated quantity of spruce and silver fir that can be supplied annually from Jaunsar Bawar being 1,500,000 cubic feet, the quantity of pulp which can be produced out of it would be 4,50,000 maunds.

Place of location of the factory.—Dakhpathur on the Jumna below Kalsi and 28 miles from Dehra railway station and the first chowki where timber is caught is the best place for the factory. Suitable wood should be assorted and taken out there for the factory. There will not be much difficulty about labour at that place. It is not advisable to establish the factory at Dehra Dun proper as the transport charges for the wood will be heavy. Dakhpathur has the advantages of being near the forests and close to water.

Means of communication to Dehra Station.—*Aerial ropeways*.—As the quantity of pulp produced would be about 5 lakh maunds annually or 1,400 maunds a day, aerial ropeways should be constructed from Dehra to Dakhpathur. This will greatly reduce transport charges. (See section 3, cement manufacture.)

Capital required.—Apart from the establishment of aerial ropeways the capital required for turning 5 lakh maunds pulp annually will be 10 lakhs of rupees. It is expected that the return will be encouraging and favourable.

3. *Cement manufacture*.—There are at present very few cement factories on any large scale in India. The outturn of these factories is very small in comparison with the demand, and large quantities are imported from the United Kingdom and Japan. Dehra Dun is rich in limestone and clay required for the manufacture of cement, but no attempt has yet been made to start this industry on a commercial scale.

Raw materials.—The chief constituents of cement are limestone, clay and coal dust. The Deoban hills, the outer Himalayan rocks and a greater portion of the Siwaliks are made of limestone, and all the river beds are full of limestone boulders. Limestone available is not hard and can be easily crushed. Silica sand is abundant near Rajpur. Hill sides of Mussoorie consist of good silica. It is very fine for cement or glass manufacture. In short, there is inexhaustible supply of raw materials. Coal dust can be had from the railway station.

Location of the factory.—Rajpur is the best place for a cement factory as it possesses the following advantages :—

- (1) It is near the source of raw materials, i. e., limestone and silica sand. Enormous quantities can be obtained within a radius of 3 to 5 miles.
- (2) It is a place near which hydro-electric or water power can be easily had for running machinery.
- (3) It is only 7 miles from the railway station.
- (4) There is no difficulty about labour.

Means of transport.—The greatest difficulty in starting a factory will be that of transport. For example, the charges are Rs. 1-8-0 a maund from Kalsi to Dehra, Rs. 1-2-0 a maund from Mussoorie. At many places it is impossible to make cart roads or lay out railways as the hills are not made of solid hard rocks.

Aerial ropeways.—The above difficulties can be solved by establishing aerial ropeways, the easiest, most economical and efficient means of transport in the hills. Power for the purpose can be obtained from the Mussoorie Hydro-electric scheme. The machinery can be run by water power also, obtained from the canals close by. For establishing an aerial rope line, 6 miles in length and sufficient for conveying raw materials from all the outlying hills to the factory at Rajpur, a sum of Rs. 2,25,000 will be required. Initial non-recurring or establishment charges come to Rs. 30,000 to Rs. 45,000 per mile. Working charges will be about 4 annas per ton per mile.

Supposing that 6,000 tons or 162,000 maunds of limestone and silica are to be brought annually from the quarries to the factory, the following is a rough estimate of cost :—

- | | Rs. |
|--------------------------------------------------|----------|
| 1. Charges for establishing 6 miles of rope ways | 2,25,000 |
| 2. Recurring expenses :— | |

	Rs.
Interest on capital (Rs. 2,25,000) at 5 per cent. per annum	... 11,250
Working charges for carrying 6,000 tons a year at 4 annas per ton per mile	... 9,000
	20,250

Thus Rs. 20,250 will be spent in bringing 6,000 tons of raw-material to the factory. Transport charges will be $\frac{20,250}{6,000}$ or Rs. 3-6-0 per ton or 2 annas per maund, and twelve hour's journey will be reduced to only $1\frac{1}{2}$ hours. The above working charges are calculated at 4 annas per ton per mile, but it is hoped that in actual working this will be further reduced as at Rajpur owing to the difference in level and the existence of a natural slope; gravitation will greatly help the carriage of the load from a higher to a lower level. If the machinery and load carriers be worked at the full capacity, which will be 50 tons a day, i. e., if 18,250 tons load be carried annually, the transport charges will be further reduced as follows :—

(1) Working charges at 4 annas per ton per mile.	$\frac{18,250 \times 6 \times 4}{16}$
	or Rs. 27,375
(2) Interest on capital (Rs. 2,25,000)	11,250
	Rs. 38,625

Transport charges may thus come to Rs. 38,625 for 18,250 tons or Rs. 2-1-1 a ton or one anna three pies a maund.

Further detailed information about aerial ropeways can be supplied if required. Such means of communication will be very profitable in the hills. Forest contractors will find it very convenient and economical for removing timber and wood from the forests.

Present rates for cement.—The present wholesale rates for cement are Rs. 80 a ton at Delhi. The factory at Rajpur will be able to sell its cement at a little over Rs. 50 a ton at Delhi. Dehra Dun and Delhi are fast developing towns where there will be sufficient demand for cement.

4. *Essential oils and medicinal herbs.*—Detailed inventory dealing with the minor forest produce is given separately at the end of the report. The following are notes on a few of them, as they require particular attention :—

- (1) Valuable essential oils can be obtained from *Skimmia Laureola* and *Zanthoxylum Alatum*, both of which grow in abundance in Chakrata hills.
- (2) Katur Chara, a kind of fodder eaten by the musk deer, is found in abundance in Deoban forests of Chakrata. It is believed that an oil possessing the smell of musk has been extracted with success out of the leaves of katur chara.
- (3) *Podophyllum Emodi*.—The root stock yields the valuable medicine known as Podophyllin. It is common in shady places above 7,000 feet.
- (4) *Viola species*.—The petals of violets are very common in Chakrata forests. They are collected by the villagers and exported to the plains as a specific for coughs and colds. Research work is required to see whether any extract or essence can be extracted out of the petals and exported instead of the bulky petals.
- (5) *Salajit*, a valuable tonic, is found on the precipices of many hills in Chakrata. A small factory for refining salajit will be a success.

-
- (6) Tulshi plant is very common in the hills around Rajpur, specially near the village of Nagal. It can yield a valuable oil.
- (7) A number of fragrant and peculiar smelling herbs are found in abundance along the sides of streams and falls in the hills. All these products can be favourably utilized for the distillation and extraction of valuable medicines. As most of the herbs are not yet analysed, detailed information cannot at present be given.
- (8) "Rasaunt," a well-known eye specific, is the root of "Kilmna" (*Berberis*) growing in abundance on the hills above 3,000 feet all over the outer Himalayan Range in Chakrata and other forests. A factory for extracting, refining and boiling of "Rasaunt" can well be started near the forests of either Dehra or Chakrata.
- (9) *Camphor and Eucalyptus trees.*—It has been noticed that the soil of Dehra is exceptionally suited for both the trees. The question of plantation of these trees for camphor and eucalyptus oils was discussed by the writer with the forest authorities and other people. Their opinion is in favour of the plantation. But experiments should first be made to find out the yield of camphor from the leaves of the trees at Dehra.
- (10) *Fibres.*—Maljhan is a climber found largely in Dehra forests. Its fibre is at present used by the villagers for making ropes. The Forest department has not yet given any contract for Maljhan fibre. The quantity of fibre available annually is about 1,000 maunds. Special contract and concession can be given by the Forest department for removing the same.
- (11) *Turpentine.*—The factory for the manufacture of turpentine is under the control of the Forest department.

5. *Glass Manufacture Raw-materials.*—The quality of glass depends along with other factors upon the quality of sand used. Sandstone ground to powder will be a very good raw material. The whole rock mountains of Jaunsar and some cliffs of Mussoorie Range are full of sandstone. The hill sides around Rajpur consist of good silica admitted to be very good for glass manufacture. Calcium carbonate (limestone) is also abundant in the neighbourhood.

Rajpur Glass Works.—The glass factory at Rajpur which worked for several years under the management and supervision of Austrian experts failed on account of the mismanagement of the proprietors who relying on the imperfect knowledge of their mistries and apprentices dispensed with the services of the experts too early. No sooner the experts turned their back difficulties set in the use of raw materials and methods of manufacture. Mistries were unable to remove them and the experts demanded such high salaries to come back that the business could not have been carried on with profits. The circumstances have greatly changed since and there will not be much difficulties in getting expert labour now. There is no reason why a glass factory cannot be started now at Rajpur so rich in fine and best raw material.

6. *Match Factory.*—The question of the match manufacture has been before the Forest Research Institute for a long time. Spruce and silver firs are suited for making match boxes and splints. The Conservator of Forests, Utilization Circle, United Provinces, Bareilly, thinks that the woods cannot be marketed below Re. 1-5 per cubic foot f.o.r. and this places the timber beyond the possibility for use for match splints. The forest authorities of Dehra Dun inform that the price of spruce and silver firs would be 12 annas per cubic foot at Dakpathar and with these rates it will be possible to utilize the timber for match splint manufacture at Dakpathar. The other branch of the factory should be at Bareilly where the rest of the work required for the finished matches may be done.

A note by the dissolved North India Matches Limited, Bareilly, given an estimate of the cost of production of one gross matches

if the daily outturn be Rs. 1,400 gross or Rs. 35,000 gross monthly for 25 working days

	a.	p.
(1) Chemicals	2	6·73
(2) Paper	0	10
(3) Labels	9	7
(4) Wood	2	0·87
(5) Packing cases	1	3
(6) Power	0	9
(7) Wages	0	9·9
(8) Salaries	0	7·6
(9) Depreciation, interest and general expenses	1	1
Total, cost per gross	10	6·1

The selling price at wholesale rates at that time was Re. 0-11-10 per gross nett for semul timber matches that the factory produced. The selling price of spruce timber matches was higher. The selling price of the imported Japanese matches is at present Rs. 2 5-0 per gross. The cost of production will be about three times what it was in 1914, i.e., it will be about Rs. 2 per gross for semul matches. If they are made of spruce and silver firs the cost will be slightly higher, say, Rs. 2-2-0 per gross. Thus it seems that there are prospects for the industry particularly when the import duty on matches has been increased. Bengal and Bihar have caught the opportunity and several small match factories have been started there.

Government patronage and concessions.—It is necessary that in order to encourage the industry, Government be pleased to sell spruce and silver fir at lower rates for match-making at Dakpathar. The transport charges for exporting match splints and boxes from Dakpathar to Bareilly will not then be a hindrance in the business. The proposed concession would not be out of place, as concessions are given by other Governments too, e.g., The Japanese Government reduced the shipping freight on matches for export, the local Governments of Bombay and Travancore gave special concessions for the utilization of their

timber in a similar way. Spruce and silver firs of Chakrata should be reserved for match industry and allowed to be extracted at commercially low rates.

7. *Plaster of Paris.*—As a side activity, a cement factory at Rajpur could easily combine with it the manufacture of plaster of Paris. The neighbouring hills contain enormous quantities of Gypsum ($\text{Ca SO}_4 \cdot 2\text{H}_2\text{O}$ Sulphate of Calcium) viz. the substance required for the manufacture of plaster of Paris.

Process of manufacture.—The process of manufacture is simple and does not require any elaborate plant. Gypsum has to be powdered and heated to remove the water of crystallization contained in it. The anhydrous powder thus produced is the plaster of Paris.

Uses and market.—Plaster of Paris is used in surgery and for making casts. It is likely to come in extended use in the manufacture of all those fine articles which are made with the help of moulds, though the demand at present is very small. The price of raw material at Rajpur being inconsiderable, the cost of production will be small and this will make further aid in extension of its use. But until the demand for it increases, the manufacture is suggested only as a subsidiary work.

8. *Tannin Extract.*—Owing to the absence of labour and market for the leather, the district is not suited for a tannery. A factory for the production of tannin extract only can profitably be started as several of the forest produce give good tanning materials.

Tanning materials.—(b) *Ban Oak (Quercus incanna)*—The bark of this tree is very valuable for tanning. The bark is available from cut or fallen trees. Preparation of tannin extract in the locality, say Dakpathar, will be a profitable business as the heavy transport charges for exporting the bark would be avoided. The establishment of aerial ropeways suggested for other industries will be a help in transportation.

(2) *Sal bark* is another material for producing tannin extract. The quantity of bark available from Dehra forest division is 10,000 maunds annually from fallen trees at 2 annas

per mound. The quantity of sal annually available is 4,80,000 cubic feet. The bark is generally given to the carters free of charge but that from the young plant can be used for extracting tannin.

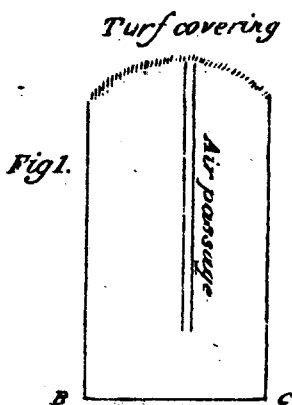
(3) Barks of Bakhli and Dhauri can also be used for the purpose but the trees are found scattered over large areas.

(4) 'Harra' is a good tanning ingredient and is exported for the purpose but this too is scattered over large areas.

However, Ban oak and sal that are found in large quantities can well be utilized for extracting tannin. A factory for sal tannin should be located at Doiwala.

9. *Wood Tar Industry.*—The writer is not aware of the manufacture of wood tar any where in India, though there is much demand for coal and wood tar which is met by imports. Charcoal is burnt at many places in the district by the crude wasteful process whereby all the bye-products are entirely lost. Wood is piled into pits or mounds. A vertical narrow passage to act as a chimney is left in the centre and a lighted stick of wood is introduced in it. The wood is thus set on fire. In order to allow air currents to pass into the interior and promote combustion the outside of the heap is covered with brush-wood and turf. No attempt is made to collect the bye-products. The object of the manufacture is to get the charcoal only.

Extraction of tar as a bye-product.—The collection of all the bye-products will involve considerable difficulties and an



elaborate scheme but in order to collect tar only a slight modification in the construction of the present pit will suffice. Tar will be extracted without any extra expense, though add considerably to the profits.

Fig. 1 is a rough sketch of the mound in which wood is at present heaped and burnt for charcoal.

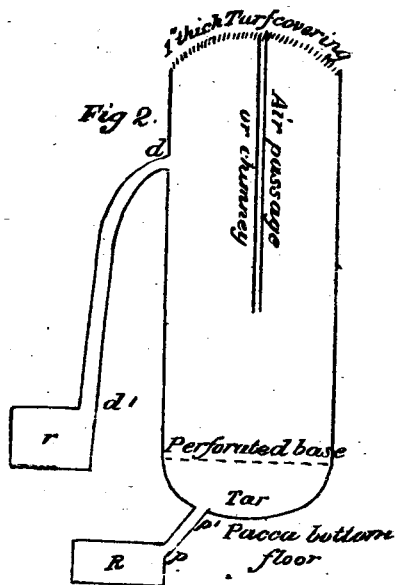


Fig. 2 is a rough sketch of the suggested modified mound to collect wood tar as described below.

The pit or mound should be built as before, say 7 ft. × 7 ft. × 10 ft. The base BC should be made of fire-bricks as shown in the figure. It should contain small holes or perforations for the tar to trickle down. The bottom floor should be rounded a little being made spherical as shown in fig. 2, and connected with a reservoir R by means of a narrow pipe pp'. Another pipe dd' should connect the upper side of the vertical wall to another reservoir r.

These reservoirs may be either permanent brick made ones or merely casks. Wood should be heaped carefully so that pieces of wood are laid side by side on the perforated base. The rest may be heaped in any manner, care being taken that as in the ordinary pit, a narrow passage for air is left in the centre. The wood should then be burnt as heretofore by introducing a lighted stick in the chimney. After an hour the top should be covered with 1" thick earth, brushwood or turf and left.

Collection of tar;—The tar as a thick oil will pass through the perforations in the base and collect at the bottom whence it will pass through the outlet pp' and collect in the reservoir R. Some crude wood spirit or pyroligneous acid and tar escaping in gaseous state from above will pass through the delivery tube dd' to the reservoir r. The perforated base of fire-bricks will last for a very long time and will not allow charcoal pieces to pass along with the oily tar. The ashes which may pass, along with the tar can easily be removed afterwards by mechanical means,

Thus without any elaborate scheme or expenditure a greater portion of the tar can be extracted. The writer is of opinion that the suggested modification will increase the amount of charcoal too as there will be very little loss in ashes. The business can be easily taken up by small capitalists or by any of the charcoal burners. The extra cost of the mound will be trifling as the price of fire-bricks is two annas each. The cost of production will be paid by the tar leaving the entire price of charcoal as profit.

Raw materials and place of location of the factory.—Firewood is abundant all over in the forests. Doiwala will be the best place for a big factory as it has got the advantages of being a railway station and proximity to the forests. The annual export of firewood from Doiwala is about 1½ lakh maunds, being 156,707 maunds in 1921-22. Out of this, 125,048 maunds were exported to the plains and 31,659 maunds to local places mostly Dehra proper.

Rough estimation of the working and profits.—As a concrete instance let us take a pit having a capacity for 100 maunds of wood.

(a) *The present pit burning.*—

	Rs.	a.	p.
Price of dry wood 100 maunds ...	30	0	0
Labour engaged ..	2	8	0
Other miscellaneous expenses ...	1	0	0
Total cost	33	8	0

Charcoal obtained is about 25 per cent., i.e. 25 maunds at 20 seers per rupee wholesale rates, its price is

is	50	0	0
Hence the nett profits are about	16	8	0

(b) *The suggested kiln.*—

	Rs.	a.	p.
Price of wood	30	0	0
Labour engaged (as before)	2	8	0
Extra labour	0	8	0
Other expenses	1	8	0
Total cost	34	8	0

As the outturn of charcoal will be more due to careful burning, it is speculated that 30 per cent, or 30 maunds will be the amount of charcoal hence its price will be ... 60 0 0

Profits 25 2 0

The amount of wood tar and its price cannot be given at present as it is not sure what amount will be extracted. Whatever it may be it will be a clear addition to profits.

Retail price of charcoal at Dehra is 16 seers a rupee and whole-sale price is 20 seers a rupee.

Charcoal is at present carried by the railway as an article of class I at maximum and minimum rates of 38 pies and 100 pies per maund per mile.

The following are the rates from Dehra Dun to principal stations:—

Stations.	Distance miles.	Maximum charges for 100 maunds.	Minimum charges.	Price f.o.r. min. rail-way rates (100 maunds).
		Rs. p.	Rs. a.	Rs. a.
Dehra to Saharanpur ...	82	16 13	4 4	214 4
„ Moradabad ..	136	26 15	7 1	217 1
„ Delhi ...	193	38 3	10 1	220 1
„ Meerut ...	152	30 1	7 15	217 15
„ Lucknow ...	338	66 14	17 10	227 10
„ Cawnpore ...	378	74 13	19 11	229 11

N. B.—The price f. o. r. includes the following;

Price of charcoal purchased at Dehra at Rs. 200 per 100 maunds, carting and loading charges at Dehra station at Rs. 10 per 100 maunds, railway freight at minimum charges, i.e. at 1 pie per 100 maunds per mile.

Tar is conveyed by the Railway as a 2nd class article for which the charges are 42 pie maximum per maund per mile and 100 pie per maund per mile minimum charges.

CHAPTER IV.

STATISTICS.

1. Lime Manufacture.

(a) *Raw material.*—Lime-stone, coal and firewood.

Limestone is collected or dug locally. Coal is imported from Bengal through the agency at Dehra. Firewood is obtained from the forests or the local bazar.

Quantity.—Limestone about 10½ lac maunds.

About 15 kilns of 2,000 maunds capacity use 3,000 tons or about 82,500 maunds of coal at the rate of 20 tons per kiln for burning.

Firewood about 1,20,000 maunds.

Value:—(1) *Limestone.*—The price varies at different places. At Dehra it is 18 to 28 rupees a 'chatta' of 100 c. ft. weighing about 150 maunds. About Rs. 1,40,000 for 10½ lac maunds of limestone.

(2) The price of 3,000 tons of coal comes to Rs. 30,000 at Rs. 10 per ton.

(3) The value of 1,20,000 maunds of firewood comes to Rs. 30,000 at 4 maunds per rupee.

Manufacture.—Number of kilns: 70 of varying capacity from 2,000 to 100 maunds.

Annual outturn of lime is 7,00,000 maunds.

Value at Re. 0-8-0 per standard maunds is Rs. 3,50,000.

Collection and stocking by piece wage, otherwise payment by time.

Annual export of lime: about 4½ lac maunds.

Local consumption is about 2 lac maunds.

(b) Lachiwala lime stone quarry—

Year.	Output.		Persons employed daily.					
	Q ant ty.	Value in—			Men.	Women.	Children.	Total.
		Mds.	Rs.	a.					p.
1918	38,276	5,039	0	0	26	...	6	32
1919	47,678	9,058	13	2	13	...	...	13
1920	43,978	8,355	13	2	10	..	1	11
1921	60,256	12,047	8	11	16	...	...	16
1922	...							
1923	...							
1924	...							
1925	...							
1926	...							
1927	...							
1928	...							
1929	...							
1930	...							

2. Other industries connected with edibles.

*Tea manufacture.**(a) General.*

Raw material.—Green leaves from the tea plants.

Value.—The leaves are plucked from the manufacturer's own plantations, no value of raw material is given.

Manufacture.—On factory system (24 factories and estates in 1921).

Outturn. The returns show the production as 1,48,762 lbs. of black tea and 7,71,859 lbs. of green tea, i. e. a total of 9,20,611 lbs. The actuals are nearly as follows:—

8,00,000 lbs. of green tea.

2,00,000 lbs. of black tea.

i. e. a total of 10,00,000 lbs.

Value.—The price varies according to quality. Contract price paid by Amritsar merchants was Re. 0.8-2 per lb. of mixed tea.

Number of persons employed (1921).—Garden labour permanent, 1,330, outside labour permanent 660, i. e., a total of 1,990 men and women, Outside labour temporary was 677.

Wages—(1) For plucking tea leaves 4 to 6 pies per lb.

(2) Permanent labour in factory is engaged on monthly pay or daily wages which vary from 6 to 8 annas for women and 8 annas to 10 annas for men in addition to a number of privileges mentioned previously.

(b) *Statement of tea production in Dehra Dun (1921).*

Number.	Plantation.	Total area in 1920.	Total area under tea in 1921.	Total area of plantation.	Total labour both in garden and outside.	Area plucked in 1921.	Quantity of tea manufactured		
		Acres.	Acres.	Acres.		Acres.	Black tea.	Green tea.	Total.
							Lbs.	Lbs.	Lbs.
1	Jiwangarh ..	75.00	75.00	123.00	31	68.00	12,202	..	12,202
2	Niranganpur ..	240.12	240.12	607.53	120	240.12	2,604	26,300	28,904
3	Lakhanwala ..	159.00	159.00	159.00	65	159.00	8,000	5,500	13,500
4	Dhartawala (Ud- diwala).	25.81	11.66	11.65	..	11.65	..	400	400
5	Harbhajwala ..	110.00	110.00	110.00	2	nil	nil	nil	nil
6	Gorakhpur ..	..	..	..	..	100.00	..	20,000	20,000
7	Raipur ..	248.00	248.00	441.90	87	188.00	..	40,850	40,850
8	Uddiwala ..	10.54	9.59	9.59	8	7.59	2,000	..	2,000
9	Asanbagh ..	..	..	..	..	..	500	1,500	2,000
10	Ambiwala ..	..	15.11	15.11	18	15.11	..	2,540	2,540
11	Annfield ..	337.50	337.50	462.50	280	337.50	4,847	58,824	90,671
12	Goodrich ..	346.00	346.00	396.00	140	346.00	9,925	31,465	41,390
13	Walibagh (Ji- wangarh).	60.00	60.00	98.00	19	60.00	15,961	..	15,961
14	Kaulagarh ..	440.77	440.77	440.77	105	440.77	42,506	29,813	72,319
15	East Hop. town ..	600.00	600.00	3,491.00	445	600.00	..	148,000	148,000
16	Arcadia ..	642.00	642.00	642.00	277	642.00	22,216	120,453	142,669
17	Ambari ..	220.00	220.00	1,280.00	112	220.00	11,406	16,996	28,402
18	Harbangwala ..	603.65	603.65	3,341.88	385	603.65	..	132,881	132,881
19	Banjarwala ..	194.06	174.08	490.99	60	159.08	1,730	24,795	26,525
20	Herbutpur ..	84.19	84.19	211.18	20	84.19	2,559	8,318	10,877
21	Udyawala ..	346.18	346.18	422.24	430	346.18	6,782	38,560	47,322
22	Kuanwala ..	90.00	90.00	90.00	40	90.00	2,000	3,409	5,409
23	Mokhampur ..	150.00	150.00	281.00	60	150.00	1,344	27,245	28,589
24	Rambag ..	123.00	40.00	142.00	2	40.00	200	..	200
	Total ..	5105.84	5002.84	..	..	4898.84	143,762	771,848	920,611

N.B.—The figures for Asanbagh are only an estimate. The actual total production of tea must be more than 920,611 lbs. Broadly speaking the production is ten lakh pounds.

3. Wood work.

(a) *Bamboo and cane furniture and chicks.*

Raw material.—Cane, bamboo, and dyes—

- (1) Cane sticks are obtained from the local forests by paying a royalty of 4 annas per head per bundle. The transport charges are about Rs. 2 per cooli from the forest to the city, a distance of about 5 miles. Cane bark is sold at Rs. 4 a seer and cane sticks at Re. 1 a seer.
- (2) Bamboo is purchased from the local market. The price varies with the size, e.g., annas 4 for a bamboo 5 yards long and 3 inches in diameter at the base.

Manufacture.—(1) No export or import, all is locally consumed. The manufacture is conducted on a cottage industry basis.

- (2) Number of actual workers is 64 mostly in Dehra, where there are 8 families.
- (3) No labourers are engaged hence no wages are paid.
- (4) No advertisement.
- (5) The articles are either made to order or sold to local dealers.

(b) *Wooden furniture.*

Raw material.—Shisham, sal, tun, chir, deodar. All is purchased locally from the bazar. Dehra Dun imported 37,950 maunds timber of chir, kail and Shisham from Hardwar in 1921-22.

Prices.—Shisham Rs. 3 per c. ft.; plank 1" thick at annas 8 to a sq. ft. tun Re. 1-8-0 per c. ft.; plank 1" thick at 0-6-0 a sq. ft.

Sal, sleeper 7' × 6" × 4½" at Re. 1-8-0 to Re. 1-12-0 per sleeper.

Chir sleeper 12' × 10" × 5" superior quality at Rs. 6 each, inferior quality at Rs. 4-8-0 each.

Deodar sleeper 8' × 12" × 6" at Rs. 13 each, 8' × 10" × 5" at Rs. 11 each.

Sawing charges per 100 ft. for 1" thick planks are Rs 8 for tyn, Rs. 12 for shisham, Rs. 5 for chir, deodar, and kail, Rs. 7-8-0 for sal.

Manufacture.—On a small factory system.

Number of factories and workers.—There are at present 7 factories with 54 workers. The artisans are generally employed on monthly salaries varying from Rs. 30 to Rs. 50.

Name of factory or owner.	Locality.	Artisen labour engaged.				Total.
		Car-penter.	Poli-cher.	Móchi.	Black-smiths.	
Bareilly Furni-ture house.	Rajpur Road	3.	1	1	...	5
Sharpe & Co. ...	Do. ...	6	4	4	2	16
C. E. Edwards	Do. ...	2	1	1	..	4
Standard Furni-ture Mart.	Do. ...	3	2	1	...	6
Nathu Ram ...	Do. ...	6	...	...	...	6
Khuda Bux ..	Paltan bazar.	3	1	1	...	5
Northern Furni-ture Stores.	Dispen-sary road.	5	2	3	2	12
	Total ...	28	11	11	4	54

N. B.—Salaries vary from Rs. 25 to Rs. 59 a month. Sharpe & Co. and Northern Furniture Stores do cabinet manufacture also.

The import of furniture from Bareilly was about Rs. 25,000 in value in 1921.

The annual consumption is about Rs. 9,600 in value. This does not include Government requirements, i. e., for the Imperial Works and other offices.

4. Miscellaneous.

Statement of export and import by rail (1921).

Name of article.	Export.		Import.	
	Quantity.	Chief places of consignment.	Quantity.	Chief places of origin.
	Mds.		Mds.	
Grain and pulse other than wheat and rice.	9,636	..	..
Hides and skins	3,732	Amritsar, Lahore ..	172,479	Meerut, Srihind, Punjab.
Rice and paddy	8,011	The plains ..	83,495	Howrah, Rangoon.
Stone and lime	626,158	(1) Lime to Delhi, Muzaffarnagar, etc. (2) Limestone to Nagina, Bareilly, Moradabad and Shahjahanpur.	..	..
Timber ..	570,466	Delhi, Punjab ..	37,950	Hardwar.
Bamboos ..	25,553	Jallundhar ..	..	..
Reeds ..	594	Jagadhhar ..	..	..
Potato ..	8,185	Meerut ..	..	..
Sugarcane ..	10,242	Moradabad ..	..	..
Tea ..	90,000 lbs.	Amritsar ..	..	..
Firewood ..	175,049	The plains ..	..	..
Whe ..	..	..	82,440	Meerut, Chandausi.
Jaggery and molasses.	..	..	31,621	Moazzampur (Bijnor).
Sugar ..	..	..	23,584	..

N. B.—Dehra Dun and Doiwala are the chief exporting stations. Dehra imports shisham and kail timber from Hardwar for building material and furniture making. The timber exported from Chakrata forests by the Jumna to Jagadhri and Delhi is not included in the above statement. It is estimated to be about 22 lakh cubic feet. The timber of Chakrata forests cannot be imported to or exported through Dehra Dun on account of transport difficulties.

CHAPTER V.

DIRECTORY.

1. List of principal manufacturers of lime.

- (1) Abdul Latif, Richpana, Dehra Dun,
- (2) Majid Ahmad, ditto.
- (3) Dewandar Singh, ditto.
- (4) Sajid Ali Khan, ditto.
- (5) Ibrahim, ditto.
- (6) Mushtaq Ahmad, ditto.
- (7) Ikramul Haq Richpana, (Karanpur) Dehra Dun.
- (8) Muhammad Said Khan, Richpana, (Dalanwala) Dehra Dun.
- (9) Pratab Singh, Richpana, Dehra Dun.
- (10) Abdul Karim, ditto.
- (11) Sarda Ram Punjabi, ditto.

2. List of brick manufacturers.

- (1) Diwan Chand, Rikhikesh (Dehra Dun),
- (2) Paras Ram, ditto.
- (3) Sukh Ram, post office Lachiwala (Dehra Dun).
- (4) Lala Mohan Singh, Dayanand Anglo-Vedic School, Dehra Dun.
- (5) Munshi Rafat Ali, Paltan Bazar, Dehra Dun,
- (6) Dekhi, son of Chokhuwala, Dharampur, Dehra Dun.

3. List of tea manufacturers.

- (1) Manager, East Hope Town Tea Factory, East Hope Town, Dehra Dun.
- (2) Manager, Harbanswala Tea Factory, post office Harbanswala, Dehra Dun.
- (3) Manager, Arcadia Tea Factory, Arcadia, Dehra Dun.
- (4) Do. Annfield Grant Tea Factory, Dehra Dun,

-
- (5) Manager, Niranjanpur Tea Factory, post office Mujra Ajabpur, Dehra Dun.
 - (6) Manager, Kaulagarh Tea Factory, Kaulagarh, Dehra Dun.
 - (7) Manager, Lakhanwala Tea Factory, Bhojawal, post office Herbutpur.
 - (8) Manager, Goodrich Tea Factory, post office Herbutpur, Dehra Dun.
 - (9) Manager, Udaya Bag Tea Factory, post office Herbutpur, Dehra Dun.
 - (10) Manager, Herbutpur Tea Factory, post office Herbutpur, Dehra Dun.
 - (11) Manager, Raipur Tea Factory, Raipur, Dehra Dun.
 - (12) Do. Kuawala Tea Factory, post office Lachiwala, Dehra Dun.
 - (13) Manager, Ambari Tea Factory, Ambari, Dehra Dun.
 - (14) Do. Mohkampur Tea Factory, Mohkampur, Dehra Dun.
 - (15) Manager, Banjarawala Tea Factory post office Majia, Dehra Dun.
 - (16) Manager, Gorakhpur Tea Factory, Dehra Dun.

4. List of sleeper and timber dealers.

- (1) Shaikh Inam Ullah, Lakhi Bag, Dehra Dun.
- (2) Ram Pershad, Mohalla Jhanda, Dehra Dun.
- (3) Kunwar Teg Bahadur Singh, Ranapur, Dehra Dun.

5. List of furniture manufacturers and dealers.

- (1) Sharpe & Company, Rajpur Road, Dehra Dun.
- (2) Irshad Ali, Proprietor, Bareilly Furniture House, Rajpur Road, Dehra Dun.
- (3) Northern Furniture Stores, near tahsil, Dehra Dun.
- (4) Khuda Bux, Paltan Bazar, Dehra Dun.
- (5) C. E. Edwards, Rajpur Road, Dehra Dun.
- (6) Standard Furniture Mart, Rajpur Road, Dehra Dun.

6. List of jams and preserve manufacturers.

- (1) Abdullah, Paltan Bazar, Dehra Dun.

7. List of general merchants.

- (1) Fitch & Company, Rajpur³ Road, Dehra Dun.
- (2) Imperial Trading Company, near post office Dehra Dun.
- (3) Jhandu Mull, Paltan Bazar, Dehra Dun.
- (4) C. E. Edwards, Rajpur Road, Dehra Dun.

8. List of Forest contractors.

- (1) Shaikh Inam Ullah, Lakhi Bag, Dehra Dun.
- (2) Munshi Allah Bux, Dehra Dun.
- (3) Digambar Pershad.

9. List of banks.

- (1) Alliance Bank of Simla.
- (2) Allahabad Bank.
- (3) Bhagwandas Bank.

10. List of Technical Schools.

- (1) Mission Girls' School, Mussoorie.
- (2) Ditto Dehra Dun.

CHAPTER

MISCEL

Inventory of minor forest product

N. B. — The products given in this list are found in

Serial number.	Scientific names.	English names.	Local vernacular names.	Localities where the species occurs and extent of production.	Description and nature of the tree or plant.
1	Cochlospermum Gossypium.	White silk cotton tree.	Katira gond tree.	Western Himalayas at low elevations.	A moderate sized deciduous tree.
2	Toddalia aculeata.	..	..	Scattered ..	..
3	Shorea Robusta.	Sal ..	Sal ..	Dehra Dun forest division and parts of Chakrata division.	A large tree, never quite leafless, well known tree. Bark should be removed soon from the fallen or cut tree to prevent the ingress of boring beetle.
4	Bourbar Malabarium.	Silk cotton tree.	Semul ..	Scattered to a height of 3,500 ft.	A very large deciduous well known tree, should be cut up green as it becomes discoloured.
5	Steroulia Villosa.	..	Godgodala	Common in forest of sub-Himalayan tracts.	A moderate sized deciduous tree, valuable on account of its fibre. Wood greyish brown, very soft and light.

VI.

LANEOUS.

(Dehra Dun forests).

accessible parts and can be had in sufficient quantities.

Chief uses as minor products, and produce.	Remarks.
<p>1. Katira gum exudes profusely in long streams from the tree.</p> <p>2. Yields floss known as kapock, in the market.</p> <p>Root bark gives yellow dye but not fast.</p> <p>1. Bark from young poles used in tanning.</p> <p>2. When tapped the tree exudes large quantities of resin, whitish at first but becoming brown, when dry.</p>	<p>1. Available quantity of wood from Dehra Dun division 480,000 c. ft. annually.</p> <p>2. Chakrata division 207 c. ft. in 1921-22.</p> <p>3. Available quantity of sal bark from Dehra Dun division 10,000 mds, at 2 annas per md.</p>
<p>1. Yields floss i. e., 'kapock' ..</p> <p>2. Yields gum i. e., 'moch-ras' ..</p> <p>3. The inner barks yields a good fibre suitable for cordage.</p> <p>Yields a coarse, strong, whitish pink fibre of a peculiar net like appearance, stripping off in broad long flakes. It is extensively used on the Malabar coast by natives for tying the rafters, bamboo and firewood bundles, making bags and cattle halter. In Dehra it is used for ropes, elephant gear rope the halter.</p>	<p>The fibre should be employed mixed with other fibres in order to impart a silky gloss.</p>

INDUSTRIAL SURVEY.

Serial number.	Scientific names.	English names.	Local vernacular names.	Localities where the species occurs and extent of production.	Description and nature of the tree or plant.
6	<i>Belisteres isora.</i>	..	..	Plentiful along southern slopes of Shiwaliks.	A shrub yielding a slight brown fibre. The bast is difficult to separate from the bark and therefore requires longer soaking in water and to be more carefully retted before it can be made into rope and twine.
7	<i>Skimmia laurolela.</i>	..	Katur Chara.	Plentiful in Chakrata hills.	A shrub or small tree.
8	<i>Zanthoxylum Alatum.</i>	..	Timbur, Temru.	Ditto ..	A shrub or small tree; wood yellow close grained.
9	<i>Boswellia serrata.</i>	The incense tree.	Salar, Salai.	Common on dry hills.	A moderate sized deciduous tree contains much gum resin.
10	<i>Azadirashta indica.</i>	Neem or Margosa-tree.	Nun or Neem.	Scattered in the hotter portions.	A well known common tree.
11	<i>Cedrus toona.</i>	Toon, Red Cedar.	Tun ..	Plentiful in Dehra proper.	Well known large deciduous tree.
12	<i>Eunonymus tingens.</i>	..	Kungku, Bhambeli, Roini.	Considerable in Jaunsar.	A small ever green tree, wood pinkish white, moderately hard and even grained.
13	<i>Celastrus paniculata.</i>	Black oil plant.	Malkungu	Common in outer Himalayas up to 4,000 feet.	A scandent shrub

Chief uses as minor products and produce.	Remarks.
<p>1. Fibre made into ropes and used for tying rice bundles in South India, as cordage for sewing gunny bags and making bullock nose ropes.</p> <p>2. Fibre useful in the Manufacture of paper.</p>	<p>Obtainable in sufficient quantities to be worthy of the trade.</p>
<p>Valuable essential oil smelling like musk is obtained from it.</p>	<p>The leaves are eaten by the musk deer.</p>
<p>Yields a valuable essential oil</p>	<p>Walking sticks are cut out of it. Weight 40 lb. per c.ft.</p>
<p>Yields gum resin of greenish colour, is burnt as incense having a not unpleasant smell. Employed in rheumatism and various diseases and is an ingredient in certain ointments.</p>	<p>Gum exudes only on injury to the trees.</p>
<p>1. Neem or margosa oil is extracted from the seeds, oil used in medicines and soap.</p> <p>2. Bright amber coloured gum exudes from the bark which is collected in small tears or fragments.</p> <p>3. Twigs are largely used as tooth brushes.</p>	<p>The gum is esteemed medicinally as a stimulant.</p> <p>Neem oil cake is a fertilizer.</p> <p>Leaves are utilized for preserving papers, cloths, etc.</p>
<p>3. The flowers afford a red and yellow dye</p>	<p>The bark is used along with a powder of the nuts Bonduc (<i>Ca salpinia Bonducela</i>) as a tonic and antiperiodic in native medicine.</p>
<p>Yields a yellow dye</p>	<p>A suitable boxwood substituted for engraving.</p>
<p>The seeds yield by expression a deep scarlet or yellow oil used in medicine for external application, also burnt in lamps and in certain religious ceremonies.</p> <p>The red seeds and leaves are employed in native medicine.</p>	<p>Destructive distillation with Benzoin, Cloves, Nutmegs, and Mace gives Olum Nigrum of pharmacy, an empyreumatic fluid employed in the treatment of 'beri-beri'.</p>

Serial number.	Scientific names.	English names.	Local vernacular names.	Localities where the species occurs and extent of production.	Description and nature of the tree or plant.
14	<i>Zisypheus xylopyra.</i>	..	Kat-lut-Bari	Scattered wild in Shiwaliks and Sub-Himalayan tracts.	A moderate sized deciduous tree. Wood yellowish or reddish brown with a darker centre.
15	<i>Rhus cotinus.</i>	The wig plant.	Tung, Tungoi.	Common in Jaunsar.	A shrub ascending to 6,000 ft.
16	<i>Schleicheria trijuga.</i>	Sapindaceae	Kosum, Gosum.	Along banks of streams. Approximate quantity from Kumson forests 120 cwt.	..
17	<i>Semecarpus anacardium.</i>	Marking nut tree	Bhilawa.	Sub-Himalayan tracts up to 3,500 ft. in warmer parts.	A deciduous tree.
18	<i>Moringa Pterygosperma.</i>	Horse radish tree.	Sunjna ..	Wild in Sub-Himalayan tracts up to Oudh.	..
19	<i>Abrus precatorius</i>	Crab's eye	Gaugchi	Common up to 3,000 ft.	A climbing thorny shrub.
20	<i>Butea frondosa.</i>	Bastard teak.	Dhak palas, Kakria, Ghichra.	Common in warmer parts.	A well known tree.
21	<i>Aeschynomene aspera.</i>	Sola pith plant.	Shola, sola	Shiwaliks ..	..
22	<i>Casia fistula.</i>	Indian labourgam	Amaltas, Sundali, Sonali.	Plentiful in Sub-Himalayan tracts up to 3,000 ft.	A Moderate sized tree.
23	<i>Bauhinia retusa.</i>	..	Semla, Kandla.	..	A moderate sized deciduous tree.

Chief uses as minor products, and produce.	Remarks.
<p>Bark and fruit both are used for tanning. Most parts of the tree are employed in medicine.</p> <p>1. Leaves, bark and wood all are used in tanning. 2. Baskets are made of the twigs.</p> <p>A yellow oil is obtained from the seed most suitable for soap making after having been rectified.</p>	<p>Var: glaberrima contains no tan.</p> <p>Wood is used for cabinet work, inlaying, carving, picture frames and fancy work in Europe.</p> <p>Rate of collection exclusive of royalty was Rs. 8-3-0 per cwt. (1912). Now about Rs. 12 per cwt.</p>
<p>The pericarp of the fruit contains a bitter and powerful astringent principle, used as marking ink.</p> <p>The tree yields by tapping an acid, viscid, juice from which a varnish is made.</p> <p>1. It yields a gum which is wild when it exudes but turns to a mahogany colour 2. From the seeds a clear limp almost colourless highly valued Ben oil is easily extracted by pressure.</p> <p>1. Beads are used as weights for fine weavings. 2. Ground down to a paste with a little cold water they are made up into small pointed cylinders which if inserted below the skin of an animal cause death.</p>	<p>In Bengal the fruits are used as a dye either alone or with alum. In other parts it is used in medicine.</p> <p>Ben oil is used for lubricating delicate machinery such as watches owing to its power of absorbing and retaining odours. It is largely employed in Europe by perfumers. The root is a substitute for horse radish.</p>
<p>It yields naturally or from artificial scars on the bark a gum called 'chunni gond', 'palas ki gond' etc.</p> <p>Sole pith is obtained from it for the manufacture of topies.</p> <p>1. Bark is used as a tanning material and a drug. 2. The pulp of the fruit is a useful purgative.</p> <p>Gum useful cheap mucilage not very strong</p>	<p>The gum occurs in round tears as large as a pea.</p> <p>It is inferior to Bengal pith.</p> <p>Largely used in Bengal in smoking mixtures to flavour the tobacco.</p>

Serial number.	Scientific names.	English names,	Local vernacular names.	Localities where the species occurs and extent of production.	Description and nature of the tree or plant.
24	Bauhinia Vahii.	..	Maljhan	Plentiful in Dehra Dun Division.	A climber ..
25	Acacia farnesiana.	Cassia ..	Wilayati Babul, Kikar.	Common tree	A well known tree
26	Acacia anacardium.	..	Babul, Kikar.	Common all over.	Ditto ..
27	Acacia catechu	Gatechu tree.	Khair, Katha.	Ditto ..	Ditto ..
28	Acacia Crotolaria.	Soap pod tree.	Ritha ..	Southern parts of the district.	A prickly scandent bush, wood yellow and hard.
29	Rosa Moschata.	Rose bush	Gulab ..	All over the district.	A well known thorny bush.
30	Terminalia Arjuna.	Myrobalans	Harna, Bahera.	Scattered in Dehra Dun forest division.	A large deciduous tree on the banks of rivers and streams.
31	Woodfordia Floribunda	..	..	..	..
32	Artemisia Maritima.	Wormwood	Kirmala ..	S. Shiwaliks ..	An aromatic herb
33	Bassia Butyracea.	Butter tree	Phulwara Mahua.	Scattered up to 4,000 ft. (Sub-Himalayas).	A large deciduous tree.
34 (a)	Calotropis Gigantea.	..	Madar ..	Abundant in Sub-Himalayas.	A large shrub, wood white and soft.
(b)	Calotropis Procera.	..	..	Ditto ..	Ditto ..

Chief uses as minor products, and produce.	Remarks.
Yield a fibre used locally for rope making ..	Fibre is inferior to jute or moco nj.
Yields cassia flowers.	..
<p>1. Yields gum Arabic which is used in calico printing and other industries where a mucilage is necessary. It is also used in medicine and as an edible gum.</p> <p>2. Short twigs are used as tooth brushes.</p> <p>3. Baskets are made of young green twigs.</p> <p>4. Bark used in tanning.</p>	<p>1. Maximum yield of gum 2 lbs. a year but the average is only a few ounces.</p> <p>2. In Sind it is an important tree on which lac insect is reared.</p> <p>3. Young shoots and spines are occasionally employed as fishing hooks.</p> <p>A ton of wood yields 250 to 300 lbs. of cutch.</p>
<p>1. Catechu or Kattha.</p> <p>2. Gum.</p> <p>3. Charcoal.</p>	
Fruit largely employed in washing silk and swollen goods commonly employed in washing hair and in cleaning tarnished silver plates.	In Northern Bengal they are utilized in poisoning fish. The bark.
Rose itar is extracted from the flowers.	
1. Yields tan bark, 2. A clear transparent gum used as a dye.	Cannot perhaps be obtained in commercial quantities constantly.
Tan bark and dye from flowers.	
Santonin is obtained from the plant. Flower beads are used for their authentic, deobstruent, and stomachic tonic qualities.	
Fixed oil cake is a manure and termitifuga.	
<p>1. Yield floss and a strong stem fibre, (2) Yield gutta parcha from the milky sap and a medicine from the root bark.</p>	<p>Wood carved into spoons. The bark fibre is one of the best of Indian fibres.</p> <p>An acre of ground planted 4 by 4 ft. with this plant will yield 10 tons of green stems and 582 lbs. of fibre i. e. a yield of 2.6 per cent.</p> <p>Fibre can be used both for textiles and paper industries.</p>

Serial number.	Scientific names.	English names.	Local vernacular names.	Localities where the species occurs and extent of production.	Description and nature of the tree or plant.
35	<i>Marsdenia tenacis</i> sima.	Rajmahal Hemp.	Tongus, giti, Babal jak.	Scattered from the Jamna to the Ganges.	A climbing shrub of the Sub-Himalayas.
36	<i>Cordia Myxa.</i>	..	..	..	..
37	<i>Cinnamomum tamala.</i>	Cassia ignea	Taj ..	Common between 3,000 and 7,000 ft.	A moderate sized evergreen tree.
38	<i>Mallotus philippinensis.</i>	..	Kamela	Plentiful up to 4,500 ft. in Ganges Sub-Himalayan Division and common in the Dun associated with sal.	A small tree, usually with a buttressed trunk.
39	<i>Sapium sebiferum.</i>	Chinese tallow tree.	Pippal yang, momchina, tar-chawi.	Wild in the Dun and in abundance.	A small glabrous tree. The fruit is a three celled capsule each cell with a single seed surrounded with a thick greasy substance the vegetable tallow.
0	<i>Phoenix acantis</i>	Date palms	Species of Khajur.	Scarce in Dehra but found in Saharanpur.	A well known palm tree.
(a)	Do.	Do.			
(b)	<i>Do. humilis.</i>	Do.			
41	<i>Colamus tenuis.</i>	Cane ..	Bet, Bent	Abundant in S. Himalayan tracts.	A very long scandent plant.
42	<i>Arundinaria</i> app.	Reed and hill bamboo.	Nul ..	Abundant in Chakrata Division Jaunsar.	..
43	<i>Pinus</i> spp..	Pine ..	Chir ..	Abundant in S. Shiwalike and Jaunsar.	A large well known deciduous tree.

Chief uses as minor products, and produce.	Remarks.
<p>The bark yields a valuable fibre known as Rajmahli fibre said to be the second best fibre in India. Used by hill tribes for bow strings and nets.</p> <p>Bird line and fracture stopper for pneumatic tyres from fruits.</p> <p>Spice and essential oil. The leaves are called tezpat and used in food as a spice. The outer layer of bark yields an oil used in the manufacture of soap. Both bark (taj) and leaves (tezpat) are used in medicine.</p>	<p>Investigations for the cultivation of the plant should be made the fibre has been pronounced to be a very valuable one for textile industry.</p>
<p>Kamala powder is a dye formed of the red glands on the surface of the capsule. Bark can be used for tanning leather ..</p>	<p>Requires special attention for collection and export or for local industry, specially dyeing.</p>
<p>1. In China the vegetable tallow is used in place of animal tallow for the manufacture of candles and soaps, also in dressing cloth. 2. The seed kernels yield 50 per cent. of a brownish yellow oil used in medicine, as a burning oil, and in umbrella varnish. 3. Leaves give a black dye.</p>	<p>Requires special attention for trade or industry.</p>
<p>Probably hard brush fibres.</p>	
<p>Largely used for basket work, cane chairs, screens, mats, moonchas, etc.</p>	
<p>The stems which are from 1 to 2 inches in girth are cut into 5 ft. length and exported to the plains for the manufacture of hooka pipes, baskets, and fishing rods.</p>	<p>The trade is somewhat declining 888,000 ringals were extracted in 1921-22 against 1,460,000 in 1920-21.</p>
<p>Turpentine, colophony and resin ..</p>	<p>Yield of resin is 8½ lb. per tree in Jausar. The monopoly is held by the Government.</p>

INDUSTRIAL SURVEY.

Serial number.	Scientific names.	English names.	Local vernacular names.	Localities where the species occurs and extent of production.	Description and nature of the tree or plant.
44	<i>Cedrus deodara.</i>	Cedar Deodar.	Deodar ..	Abundant in Jaunsar.	A well known, large, evergreen tree.
45	<i>Quercus incana.</i>	Ban oak ..	Ban, baj ..	Abundant in Jaunsar 2,000 ft. and above.	A moderate sized or large evergreen tree.
46	<i>Podophyllum emodi.</i>	American mandrake.	Ban kakri, chimyaka, wan wangan.	Common in shady places above 7,000 ft.	Herb, small and erect.
47	..	<i>Viola</i> species.	Banufsha..	Very common in Jaunsar.	Herb ..

N. B.—It is almost impossible to give the area or available quantity of the lately. None of the forest officers could give any idea about the area or produce. misleading. A rough idea about the available quantity can be obtained about the quantity of the produce extracted by them. It is best to mention dance or not. I have done my best to collect as much information as possible available quantity of those produce which are separately extracted is given under

In preparing this list help has been taken from the personal knowledge of Research Institute. Besides this the following books were studied by me and

(1) 'Commercial Products of India' by S. G. Watt.

(2) 'Indian woods and their uses,' Indian Forest Memoirs, Vol. I, no. 1, by R. S. Troup, F. C. H.

Chief uses as minor products, and produce.	Remarks.
An oil 'kelon-ka-tel' resembling turpentine is extracted from it and is used in veterinary practices. The aromatic wood called Sanubur-el-hindi by physicians is useful in rheumatism, paralysis, etc.	The amount of Deodar extracted from Chakrata in 1921-22 was 812,613 c. ft.
The bark is very valuable for tanning.	The dry bark contains 23.96 per cent. of tannin. The amount of wood extracted in 1921-22 from the Chakrata division was 3,752 c. ft. but more can be supplied.
The root stock yields the valuable medicine known as podophylline. The root contains a valuable dye stuff, quer cetin which is easy to isolate.	
The petals of violets are collected by villagers and exported to the plains as a specific for coughs and colds.	

produce. The minor produce is scattered all over the forest and not sold separately. They say that such figures will be absurd and of no avail; will rather be only by enquiries from all the forest contractors who can give some information the localities where a certain species is found and to say whether it is in abundance the same, and nothing more can be obtained from any source. The the remarks column.

Mr. Robertson, the Forest Economist and the study of the museum in the Forest valuable information gathered from them:—

- (3) 'Commercial Guide to the Forest Economic Products of India' by R. S. Pearson, F. L. S.
- (4) 'Forest Flora of the Shiwaliks and Jaunsar Forest Divisions,' by U. N. Kanji Lal, F. L. S.

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1. District Gazetteer, Dehra Dun.
2. Punjab P. W. D. papers.
3. Commercial Products of India, by Sir George Watt.
4. Indian Woods and their Uses, by R. S. Troup, F. C. H.
5. Commercial Guide to the Forest Economic Products of India, by R. S. Pearson, F. L. S.
6. Several numbers of Indian Forest Memoirs.
7. Economics of Industry.

Report on the
INDUSTRIAL SURVEY
of the United Provinces

Etawah District

By
JAGDISH SAHAI WATAL, B.A.

3



ALLAHABAD :

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1923

CONTENTS.

	<i>Page.</i>
Foreward	i-ii
CHAPTER I.—	
1. General features	1
2. Population	ib.
3. Forests	ib.
4. Canals	2
5. Railways	ib.
6. Ferries	ib.
7. Roads	3
8. Markets	ib.
9. Fairs	5
10. Cattle Census	6
CHAPTER II.—	
1. Art Industries—	
(a) Peacock feather fans	7
(b) Sacrificial instruments	8
2. Building materials	ib.
3. Chemicals—	
(i) Reh	10
(ii) Saltpetre	17
4. Food-grains	18
5. Glass	22
6. Haberdashery (horn combs)	24
7. Leather Industry	25
8. Miscellaneous—	
(a) Indigo	28
(b) Jail Industries	ib.
(c) Tin-can making	30
9. Other industries connected with edibles (fishing)	31
10. Textiles—	
(a) Durries	33
(b) Ginning	34
(c) Hand-loom weaving	36

	<i>Page.</i>
CHAPTER III.—	
1. Food-grains	39
2. Glass	<i>ib.</i>
3. Horn combs	<i>ib.</i>
4. Leather	40
5. Indigo	<i>ib.</i>
6. Reh	<i>ib.</i>
7. Spinning mill	41
8. Handloom weaving	<i>ib.</i>
9. Sack-cloth weaving from aloe fibres	42
CHAPTER IV.—(Statistics)—	
1. Art Industries	43
2. Glass	<i>ib.</i>
3. Haberdashery (horn combs)	45
4. Leather	<i>ib.</i>
5. Miscellaneous (Tin-can making)	46
6. Textiles	47
CHAPTER V.—(Directory)—	
1. Peacock feather fans manufacturers	49
2. Brick-kilns	<i>ib.</i>
3. Grain dealers	50
4. Block-glass manufacturers	51
5. Paikars	<i>ib.</i>
6. Bhattis	52
7. Ginning and Pressing mills	<i>ib.</i>
8. Durrie manufacturers	<i>ib.</i>
9. Yarn dealers	<i>ib.</i>
10. Comb-manufacturers	53
CHAPTER VI.—(Miscellaneous)—	
1. Octroi duty on exports and imports within the municipality	54
2—5. Railway freights	<i>ib.</i>
6. Industrial workers	57
Bibliography	<i>ib.</i>

FOREWORD.

Etawah report has been drawn up on lines of reports published previously. The first chapter gives an idea of the chief physical characteristics of the district and the second contains brief description and suggestions for the improvement of existing industries. The existence of raw products so far as they have an effect on industries has also been indicated here. The third chapter is a *résumé* of the suggestions for improvement in the district industries, while chapter fourth contains statistics. The fifth chapter gives a directory of principal dealers and manufacturers.

Co-operative Societies are recommended for leather workers in Bidhuna and glass workers in Serai Shishgaran.

A weaving and a dyeing school at Etawah will help in the formation of small handloom weaving and dyeing factories which are wanted there. A cheap and better process of softening and straightening horns than by heating them is wanted to be demonstrated to the comb-makers and the Technological Institute can take up the problem.

The result of experiments conducted in the Technological Institute by Dr. E. R. Watson for manufacturing carbonate of soda from reh has been published in the journal of Indian Industries and Labour (February, 1922) and is brought to the notice of persons desirous of taking up the question.

This report has been revised by Mr. S. T. Gadre, Industrial Chemist to Government, United Provinces, for which our thanks are due to him. Thanks are also due to the following gentlemen who have helped the Divisional Superintendent in his work :—

1. Rai Bahadur Shiva Prasad (Retired Judge),
2. Babu Chhronji Lal Saheb,
3. Lala Suraj Narain Saheb,
4. Pandit Kailas Nath Mutto, Naib-Tahsildar, Barthana,
5. Babu Dori Lal, Sadar Qanoongo,

-
6. Babu Baleshwar Prasad, Chairman, Municipal Board,
 7. Mr. Babu Ram Gupta, Vakil,
 8. Mr. Hira Lal, Manager, West India Patent Press,
 9. Babu Braj Kishore Sharma, Tahsildar, Auraiya,
 10. Pandit Rup Kishan, General Superintendent, Collector-ate.

CHAMPA RAM MISRA.

21st January, 1923.

CHAPTER I.

INTRODUCTION.

1.—General Features.

Boundaries of the district :—

North.—Districts of Mainpuri and Farrukhabad,

South.—Jalaun and Gwalior state,

East.—Cawnpore district,

West.—Agra district.

The district is divided into three main natural divisions.

(1) *Pachar*—Comprising of the northern portions of tahsils Etawah, Bharthana, Auraiya and the whole of Bidhuna. This has good cultivation, interspersed with big patches of usar land which yield large quantities of 'reh.'

(2) *Ghar*—Lying between the Sengar and the Jamna rivers is a continuous cultivated tract. Lakhna in this tract was a centre of cotton and ghi trade, which declined for want of transport facilities.

(3) *Par*—Including portions of Auraiya, Bharthana and Etawah tahsils. This tract is cut up by ravines and has very little cultivation.

2.—Population.

Census of 1921—733,532.

3.—Forests.

Afforestation operations have been carried on by Government in the ravine area of the 'Par' tract for some time. They were begun in 1884 on the representation of Mr. Fisher, the then Collector of the district. The forest is therefore known by the name of Fisher Forest. The area was extended subsequently. The forest consist mostly of Babul trees and grass. It was leased in 1902 to Messrs. Cooper Allen and Company of Cawnpore for a period of 50 years at an annual rent of Rs. 3,000. The ravine area was useless for purposes of cultivation, and was only used as a pasturage for cattle. The forest

supplies fuel, of which there is a great dearth in the Doab of the Ganges and the Jamna.

	Area-
(a) Fisher forest ...	3,600 acres.
(b) Newly acquired area for extensions ...	19,182 acres.

4.—Canals.

	Area irrigated in 1920-21.
Lower Ganges—Etawah Branch ...	177,360 acres.
Bhognipur Branch.	
Ganges Canal—Cawnpore Branch, Kansua Distributary.	

The area irrigated in the district from all sources is 733,532 acres.

5.—Railways.

East Indian Railway.	Length.	Stations.
Main Line ...	50 miles ...	Kanchausi, Phaphund, Pata, Achhulda, Samohon, Bhar- thana, Ekdil, Etawah, Sarai Bhopat, Jaswant- nagar.

6.—List of Ferries.

<i>On the Jamna river—</i>		Remarks.
1. Pratapner,	9. Juhika,	The rivers are navigable in winter shortly after the rains.
2. Rajghat Etawah,	10. Bijhalpur,	
3. Sakatpura.	11. Asewa,	
4. Jarholi,	12. Keontra,	
5. Dibhauhi,	13. Sikrouri,	
6. Kandhesi Ghar,	14. Meri Rangua,	
7. Dalip Nagar,	15. Tatarpur.	
8. Sher Garh,		
<i>On the Chambal river—</i>		
16. Udi,	20. Sahson,	
17. Chikni,	21. Pali-ghar,	
18. Pachhayan-Gaon,	22. Mahua Soonda.	
19. Barechha,		

7.—List of Roads.

<i>Metalled Roads—</i>			Miles.
1. Jaswantnagar Kachaura	...	...	5
2. Mainpuri Road	...	...	14
3. Achhald-Bidhuna	...	...	10
4. Dibiapur-Jalaun	...	...	15
5. Dibiapur-Phaphund.	...	...	5
6. Usrahar Sundaus (from Bharthana to Lakhna)	...	...	8
7. Jaswantnagar-Chhimara	...	...	4
8. Etawah-Kanauj	...	...	4
9. Farrukhabad Road	...	...	31
10. Gwalior Road	...	...	7
11. Cawnpore Road	...	...	27
12. Agra Road	...	...	16

Unmetalled Roads—

1. Sarai Bhopat-Pratapner,	13. Customs Lines Road,
2. Usrahar-Sundans,	14. Bilanda Road,
3. Etawah-Kanauj,	15. Datauli-Konera,
4. Debiapur-Bela,	16. Mahewa-Newari,
5. Achalda-Phaphund,	17. Collectory Road,
6. Rurugunj-Kandar Kot,	18. Airwa-Bidhuna,
7. Etawah-Bhadamai,	19. Chhachoond-Phaphoond,
8. Kachaura Ghat,	20. Bijhalpur-Bela,
9. Moonj Kumbhwar,	21. Phaphund-Kanchausi,
10. Hardoi-Killi,	22. Auraiya-Phaphund,
11. Etawah-Kumbhwar,	23. Ajitmal-Phaphund,
12. Circular Road,	24. Keontra-Ghat.

8.—List of Markets.

<i>Tahsil Etawah—</i>	Market days.
1. Jaswantnagar	... Saturdays and Wednesdays.
2. Bedpura	... Fridays and Mondays.
3. Ekdil	... Tuesdays and Saturdays.
4. Basrehar	... Thursdays and Sundays.
5. Bahadurpur	... Saturdays and Tuesdays.
6. Heonra	... Tuesdays and Fridays.

Market days.

- | | | |
|--------------|-----|-------------------------|
| 7. Chaubia | ... | Wednesdays and Sundays. |
| 8. Pratapner | ... | Tuesdays and Saturdays. |
| 9. Bhatpura | ... | Tuesdays and Fridays. |

Tahsil Bharthana—

- | | | |
|----------------------|-----|----------------------------------|
| 10. Usrahar | ... | Mondays and Fridays. |
| 11. Umer Senda | ... | Mondays and Thursdays. |
| 12. Aghini | ... | Wednesdays and Saturdays. |
| 13. Maman Himuabpur | ... | Tuesdays and Saturdays. |
| 14. Qadampur | ... | Sundays and Thursdays. |
| 15. Kothi of Kudrail | .. | Sundays and Thursdays. |
| 16. Poonja | ... | Mondays and Thursdays. |
| 17. Bharthana | ... | Sundays, Fridays and Wednesdays. |
| 18. Malhausi | ... | Sundays and Wednesdays. |
| 19. Ahiripur | ... | Tuesdays and Saturdays. |
| 20. Bakewar | ... | Mondays and Fridays. |
| 21. Lukhna | ... | Wednesdays and Sundays. |
| 22. Bijauli | ... | Tuesdays and Saturdays. |
| 23. Purdoli | ... | Mondays and Thursdays. |
| 24. Mahewa | ... | Mondays and Thursdays. |

Tahsil Bidhuna—

- | | | |
|---------------|-----|---------------------------|
| 25. Bidhuna | ... | Tuesdays and Fridays. |
| 26. Achalda | ... | Mondays and Thursdays. |
| 27. Ponthi | ... | Wednesdays and Sundays. |
| 28. Barerahar | ... | Tuesdays and Saturdays. |
| 29. Udaipur | ... | Wednesdays and Saturdays. |
| 30. Bondeypur | ... | Sundays and Wednesdays. |
| 31. Kudarkote | ... | Tuesdays and Saturdays. |
| 32. Ruruganj | ... | Tuesdays and Saturdays. |
| 33. Palia | ... | Mondays and Thursdays. |
| 34. Poora | ... | Wednesdays and Saturdays. |
| 35. Ghasara | ... | Wednesdays and Sundays. |
| 36. Sheoganj | ... | Wednesdays and Sundays. |
| 37. Barhan | ... | Mondays and Thursdays. |

Tahsil Auraiya—

- | | | |
|--------------------|-----|---------------------------|
| 38. Sarai Baberpur | ... | Sundays and Wednesdays. |
| 39. Qasba Phaphund | ... | Wednesdays and Saturdays. |

Market days.

40. Moradganj	...	...	Mondays and Thursdays.
41. Bilawan	...	...	Tuesdays and Fridays.
42. Auraiya	...	...	Tuesdays and Fridays.
43. Bhureypur Kalan	...	...	Tuesdays and Fridays.
44. Mehauli	..	...	Wednesdays and Sundays.
45. Kakor Buzurg	...	...	Mondays and Fridays.
46. Khanpur Phaphoond	...	...	Tuesdays and Fridays.
47. Keshampur	...	...	Mondays and Thursdays.
48. Rosbangpur	...	...	Fridays and Tuesdays.

9—List of Fairs attended by persons over 1,000.

Locality.	Name of fair.	Dates.
Hardoi	... Debi Ji	... Chait Sudi 9th to end of Chait.
Chaubia	... Do.	... Chait Sudi 8th.
Etawah	... Exhibition	... November.
Barhpura	... Kundesar Maha- deoji.	Bhadon Sudi 6th.
Sonai	... Debiji	... Asarh 16th to Asarh Puno 30th.
Etawah	... Ram Lila	... Kuar Sudi 5th to 11th.
Do.	... Saleeno	... Sawan Sudi Pooranmasi.
Do.	... Dam Dauj	... Chait Badi Duj.
Do.	... Chariyun	... Beginning of Besakh.
Jaswantnagar	.. Ram Lila	... Kuar Sudi 1st to 11th.
Dharwar	... Debi Ji	... Chait Sudi 9th.
Sarsai Nawar	... Hazari Mahadeoji	Phagun Badi 13th and 14th.
Do.	... Do.	... Chait Badi 8th.
Merhi	... Morha Deo.	... Katik Sudi 2nd.
Lakhna	... Kalka Debi	... Chait 1st to 30th.
Do.	... Ram Lila	... Kuar Badi 12th to Kuar Sudi 12th.
Mahewa	... Kalka Debi	... Chait Sudi 9th to Poono.
Do.	... Ram Lila	... Dasehra Kuar.
Doba	... Darbasha Rikh	... Aghan Sudi Poono to Pus Badi Amawas.
Raghunathpur	... Ramchanderji	... Chait Badi 8th and 9th.

Locality.	Name of fair.	Dates.
Chakerpur ...	Mahabirji ...	Baisakh Badi 5th to 7th.
Barhan ...	Sala Debi ...	Baisakh Sudi 1st to 4th.
Kudar Kote ...	Mahadeoji ...	Phagun Badi 13th.
Gahesar ...	Maha Mai ...	Asarh Sudi 9th.
Ruruganj ...	Jwataji ...	Chait Sudi 8th to Baisakh Badi 2nd.
Achalda ...	Maha Mai ...	Poos Sudi 6th to Poos badi 13, Baisakh Sudi 5th to 13th.
Piprolī Sheo ...	Debiji ...	Chait Sudi 11th and 12th.
Phaphund ...	Pir Bukhari Shah ...	Poos Sudi 5th to 15th.
Do. ...	Ram Lila ...	Kuar Sudi 8th to 13th.
Do. ...	Moharram ...	October.
Auraiya ...	Dhanushjug ...	Chait Sudi 2nd to 11th.
Sherpur Saraiyan ...	Mahabirji ...	Bhadon Badi (Tuesday).
Moradganj ...	Exhibition and Fair ...	Aghan Sudi 4th to 14th.
Chauki ...	Chaukian ka Mela ...	Asarh Sudi Poono.
Qasba Khanpur ...	Burki Ashnan ...	Kartik Sudi Poono.

10.—Cattle census figures are as under for 1919-20.

1. Bulls ...	...	...	162
2. Bullocks ...	...	...	119,840
3. Cows ...	...	...	79,414
4. Calves ...	...	...	99,481
5. Male buffalos ...	...	...	31,937
6. Cow-buffalos ...	...	...	79,895
7. Buffalo-calves ...	...	...	70,582
8. Sheep ...	...	...	23,091
9. Goats ...	...	...	101,242
10. Horses ...	...	...	4,738
11. Mares ...	...	...	6,897
12. Young stock ...	...	...	2,729
13. Mules ...	...	...	169
14. Donkeys ...	...	...	4,554
15. Camels ...	...	...	1,075
Total			625,806

CHAPTER II.

Description of, and suggestions for the improvement of, the various district Industries.

1.—Art Industries.

(a) *Peacock Feather Fans.*

About 40 persons or 10 families—mostly living in Chirimar Tola of Etawah city—manufacture fans from peacock feathers.

Raw material.—

Import.—Article: Peacock feathers.

Amount: 80 maunds.

Places of origin: Ahmedabad and Jeypore, and to a small extent from Jodhpur, Alwar and Bikaner.

Exports.—Article: Fans.

Amount: 60 maunds.

Places of consignment: Sialkot, Darbhanga, Calcutta, Lucknow, Fyzabad, Delhi, Hyderabad, Muttra, Ambala, Bareilly, Bhagalpur, Benares, Agra, Cawnpore, Jullundhar, Peshawar, Quetta, Amritsar, Ludhiana, Gaya, Multan, Bombay and Karachi.

Marketing system.—Only two persons, Dwarka Kâhar and Mangali Prasad, export these feathers to Calcutta through one Sri Ram. It is said that they are exported to Europe, France and China from there. China is the principal purchaser of these feathers. Other manufacturers themselves take their goods for sale to big cities like Calcutta, etc. There are no middlemen in the industry.

Season.—Winter (October to February) is the season for work.

Sales are conducted in summer (March to July or August).

Daily outturn.—One man can manufacture 50 ordinary and 25 fancy fans.

<i>Cost of making 50 ordinary fans—</i>		Rs.	a	p.
Price of 2,500 feathers at Rs. 3 per thousand	..	7	8	0
Do. of thread	... ..	1	0	0
Do. of Arhar stalks used as handle at Re. 0-3-0 per 400 pieces	... ..	0	0	5
Total	... ..	8	8	5

These would sell for Rs. 10-5-0; saving Re. 1-12-7.

<i>Cost of making 25 fancy fans—</i>		Rs.	a	p.
Price of 1,250 feathers at Rs. 3 per 1,000	...	3	12	0
Do. of thread	... ..	0	6	0
Do. of 25 handles	... ..	0	0	3
Total	... ..	4	12	3

These would sell for Rs. 7-13-0; saving Rs. 3-10-9.

The workers in peacock feathers carry on their trade on the lines of cottage industry in which the males are assisted in their work by women. They do not engage any outside labour but do the entire manufacturing business from start to finish themselves.

(b) *Sacrificial instruments.*—In this district sacrificial instruments used to be made in Jaswantnagar, some ten years ago, by one Baldu Tathera. Baldu has died and the manufacture has stopped. His son is living but does not know the art.

The regrettable instance of Baldu dying without teaching the art of making sacrificial utensils even to his son is not a solitary one. This is an everyday occurrence, and is the root cause of the decline of many art industries of India.

2.—Building materials.

(a) The following classes of bricks are prepared :—

Name of brick.	Class of brick.	Size.	Rate per 1,000.	Colour.
1. Dabbidar	I ...	(9" × 4½") × 3" rectangular shape.	Rs. 14	Red.
2. Do.	II ...	(9" × 4½") × 3" semi-rectangular shape.	10 to 12	Yellow.
3. Do.	III ...	(8" × 4") × 1½" semi-rectangular shape.	8	Do.

Name of brick.	Class of brick.	Size.	Rate per 1,000.	Colour.
4. Gumman ...	II ...	(9" X 4 1/2") X 3"	Rs. 10.	} Red and yellow.
5. Mister ...	I ...	(8" X 4") X 1 1/4" small brick.	6	
6. Do. ...	II ...	(8" X 4") X 1 1/4" small brick.	5	

Etawah district is not rich in minerals. However, brick earth is obtainable everywhere but stone quarries such as are found in Allahabad district at Shankargarh do not exist here. Bricks are made of different varieties and sizes and their prices vary according to their quality. The absence of any quarries in the district renders it necessary to import stone from the neighbouring district of Agra and Gwalior State. The district possesses about 19 brick kilns the annual outturn of which is roughly estimated to be about one and a half lakhs worth of bricks. The royalty paid to zamindar for use of ground for digging out brick earth comes to Rs. 30 to Rs. 35 per bigha for one year.

Nim and mahua wood is found in abundance in this district. Shisham is also obtainable in quantities. But sakhu has to be imported for building purposes from Cawnpore or Farrukhabad.

(b) The following kankar quarries are found along road side in the district :—

Name of road.	Name of quarry.	Estimated.	
		Bed area.	Average thickness.
		Miles.	Feet.
1. Cawnpore Road ...	1. Konera ...	2 X 2	1 1/2
	2. Kunwarpur ...	1 X 1	2
	3. Takenpur ...	1 X 1	2
	4. Parsati ...	1 1/2 X 1	1 1/2
	5. Uncha ...	1 X 1	2
	6. Nandpur ...	1 X 1	1 1/2
2. Agra Road ...	1. Konera ...	2 X 2	1 1/2
	2. Palsawa ...	1 X 1	2
	3. Masoli ...	2 1/2 X 2 1/2	2
	4. Chhote-ghat ...	1 X 1	1

Name of road.	Name of quarry.	Estimated.	
		Bed area.	Average thickness.
		Miles.	Feet.
3. Fatehgarh Road ...	1. Konera ...	1 × 1	1
	2. Killi Saraiya ...	2 × 1	2½
	3. Sirsa ...	1 × 1½	1½
	4. Morao ...	1 × 1	1½
	5. Tiranji ...	1 × 1	1½
	6. Madhopur ...	1 × 1	1½
	7. Dundpur ...	1 × 1	1½
4. Mainpuri Road ...	1. Konera ...	1 × 1	1½
	2. Palsawa ...	½ × ½	1½
	3. Mamripur Sedpur ...	2 × 2	2
5. Kaohara Ghat Jaswantnagar.	1. Sirsa ...	1 × 1½	1½
6. Bharthna Road. (Bakewar-Lakhna).	1. Morhi ...	2 × 2	2
	2. Takroopur ...	1½ × 1½	2
7. Achalda Bidhuna Road.	1. Pasua ...	2½ × 2	2
8. Debiapur-Jalaun ..	1. Bamhripur ...	1 × 1	1½
	2. Daulatpur ...	1½ × 1½	1
	3. Mahrpur ...	1 × 1	1
9. Jaswantnagar Chhimara Road ...	1. Parsawa ...	1 × 1	1½
	2. Rainagar ...	½ × ½	1½
10. Bharthna Road ...	1. Morhi ...	2 × 2	2
	2. Baherpur Nagla ...	1 × 1	1½

N.B.—Average thickness of bed is 1 foot to 1½ feet :—Thickness does not exceed 2 feet at any place in the district.

There are several kankar quarries in the district. Beds of the Jamna and Chambal rivers yield kankar of good quality which when dug out is soft but hardens when exposed to air. There is another variety known as Bichua kankar which is found in the district lying buried under "Bhur" soil. The kankar obtainable from the ravines is considered suitable for use in the preparation of lime, which is sold at Rs. 16 to Rs. 18 per 100 cubic feet.

3.—Chemicals.

(i) Reh.

(a) *General.*—A statement showing the extent of the area in which reh exists in the district is appended. The usar soil of the district is richly impregnated with alkali salts. Reh is impure carbonate of soda and is used locally in the manufacture of glass. In fact, soda is one of the essential chemicals of the modern manufacturing industry. On a rough estimate its annual import into India may be put at 20,000 tons. This is a sufficient

argument for recommending its manufacture in India from the reh which so plentifully occurs in the Etawah district, efflorescing perennially on long continuous tracts from Phaphund to Etawah.

(b) Reh area.

Name of village.	Estimated area over which reh extends.	Name of metalled road.	Name of canal.	Name of nearest important village.	If the area includes patches of cultivation.
<i>Tahsil Etawah.</i>	<i>Acres.</i>				
1. Chit Bhawan	20	Etawah-Farrukhabad.	Lower Ganges canal, Bhognipur division.	Chit Bhawan	Nil.
2. Lakhapur ...	10	Ditto ...	Ditto ...	Do. ...	"
3. Parasna ...	20	Ditto ...	Lower Ganges canal, Etawah division.	Parasna ...	"
4. Mangaween	20	Ditto ...	Ditto ...	Do. ...	"
5. Nagarea Kalpur.	5	Ditto ...	Ditto ...	Do. ...	"
6. Keshanpur Rohan.	5	Ditto ...	Ditto ...	Rohan ...	"
7. Rohan ...	8	Ditto ...	Ditto ...	Do. ...	"
8. Baralackpur	25	Ditto ...	Ditto ...	Baralackpur	"
9. Hardoi ...	5	Ditto ...	Ditto ...	Hardoi ...	"
10. Chanbia ...	5	Ditto ...	Ditto ...	Chanbia ...	"
11. Khara Helu	5	Ditto ...	Ditto ...	Do. ...	"
12. Karri ...	10	Ditto ...	Ditto ...	Karri ...	"
13. Shadipur and Saharpur.	4	Mainpuri ...	Ditto ...	Kumbhwar ...	"
14. Bina ...	7	Ditto ...	Ditto ...	Bina ...	"
15. Faroopura ...	10	Farrukhabad-Etawah.	Ditto ..	Moonj ...	"
16. Khardeoli ..	6	Mainpuri ...	Lower Ganges canal, Bhognipur division.	Igawan ...	"
17. Phoolapur ...	4	Ditto ...	Ditto ...	Do. ...	"
18. Nagla Lekhi	3	Ditto ...	Ditto ...	Do. ...	"
19. Raghooপুর...	7	Ditto ...	Lower Ganges canal, Etawah division.	Kumbhwar ...	"
20. Baurain ...	3	Ditto ...	Ditto ...	Do. ...	"
21. Bhagolipur Durg Prasad.	2	Ditto ...	Ditto ...	Do. ...	"
22. Bhadai Kahipur.	6	Ditto ...	Ditto ...	Do. ...	"
23. Latoopura ...	4	Ditto ...	Ditto ...	Do. ...	"
24. Urai ...	5	Ditto ...	Ditto ...	Do. ...	"
25. Koiya ...	8	Ditto ...	Ditto ...	Koiya ...	"

Name of village.	Estimated area over which reh extends.	Name of metalled road.	Name of canal.	Name of nearest important village.	If the area includes patches of cultivation.
<i>Tahsil Bharthna.</i>					
	Acres.				
1. Adhpur ...	25	No metalled road	Lower Ganges canal, Etawah division.	Baherpura ...	Nil.
2. Aghani ..	40	Ditto ...	Ditto ...	Maman ...	"
3. Alampur ...	15	Ditto ...	Ditto ..	Toriya ...	"
4. Amthari ...	20	Ditto ...	Ditto ...	Maman ...	"
5. Arharpur ...	30	Etawah-Farrukhabad road.	Ditto ...	Toriya ...	"
6. Apurpura ...	20	None ...	Ditto ...	Bair ...	"
7. Bachhroi ...	20	Usarhar-Sindans katcha road.	Ditto ...	Usarhar ...	"
8. Baherpura ...	30	Bharthna-Dhakupura katcha road.	Ditto ..	Baherpura ...	"
9. Salimpura ...	25	Usarhar-Sindans katcha road.	Ditto .	Salimpura ...	"
10. Samhon ...	80	Railway station	Ditto ...	Samhon ...	"
11. Samthar ...	100	Usarhar-Sindans katcha road.	Ditto ...	Maman ...	"
12. Sarai Chouri	40	Nil ...	Ditto ...	Pali Khurd...	"
13. Sarsai Nawer	250	Etawah-Farrukhabad road.	Ditto ...	Sarsai Nawer	"
14. Soron ...	30	Bharthna-Dhakupura katcha road.	Ditto ..	Takha ...	"
15. Takha ...	125	Usarhar-Sindans katcha road.	Ditto ...	Do. ...	"
16. Thari ..	100	Bharthna-Dhakupura katcha road.	Ditto ...	Baherpura ..	"
17. Tirkhi Tilockpur.	40	Etawah-Farrukhabad road.	Ditto ..	Sarsai Nawer	"
18. Toriya ...	40	Ditto ...	Ditto ...	Toriya ...	"
19. Umersanda..	50	Usarhar-Sindans katcha road.	Ditto ...	Umersenda...	"
20. Alampur Bibauli.	5	Bharthna railway station.	Ditto ..	Bibauli ...	"
21. Alampur Toriya.	5	Ditto ...	Ditto ...	Toriya ...	"
22. Badkan-Shahpur.	10	Usarhar-Sindans katcha road.	Ditto ..	Usarhar ...	"
23. Bahadurpur Pachar.	10	Ditto ...	Ditto ...	Do. ...	"
24. Bampur ..	20	Ditto ...	Ditto ...	Bampur ...	"
25. Bharatpur ...	15	Ditto ...	Ditto ...	Do. ...	"
26. Bhartia ...	10	Ditto ...	Ditto ...	Do. ...	"
27. Deorasai ...	10	Nil ...	Ditto ...	Apurpura ...	"
28. Ekarpur ...	10	Nil railway station Ekdil.	Ditto ...	Ekdil ...	"

Name of village.	Estimated area over which it extends.	Name of metalled road.	Name of canal.	Name of nearest important village.	If the area includes patches of cultivation.
	Acres.				
29. Gopnugunj...	10	Usrahar-Sindans katcha road.	Lower Ganges canal, Etawah division.	Bholi ..	Nil.
30. Kishanpur ..	20	Ditto ...	Ditto ...	Punja ...	"
31. Khanabaadh	10	Ditto ..	Lower Ganges canal, Etawah division.	Bamnipur ...	"
32. Kharagpur...	5	Ditto ...	Ditto ...	Do. ..	"
33. Lahariyapur	10	B h a rthna-Dhakupura katcha road.	Ditto ..	Samhon ..	"
34. Bakoli ...	30	Etawah-Farrukhabad road.	Ditto ...	Bakoli ...	"
35. Bana Mai ...	40	B h a rthna-Dhakupur katcha road.	Ditto ...	Pali Khurd ..	"
36. Balupur ...	20	Usrahar-Sindans katcha road.	Ditto ...	Maman ...	"
37. Bani Hardoi	30	Etawah-Farrukhabad road.	Ditto ..	Pali Khurd ..	"
38. Bair ...	30	Usra-Sindans ..	Ditto ...	Bair ...	"
39. Belahar ...	50	Ditto ...	Ditto ...	Betahar ...	"
40. Betiapur ...	30	Ditto ...	Ditto ...	Bholi ...	"
41. Bholi ...	50	Ditto ..	Ditto ...	Bholi ...	"
42. Birsinghpur	30	Ditto ...	Ditto ..	Apurpura ...	"
43. Chamerpur	30	Ditto ...	Ditto ...	Bamnipur ...	"
44. Dig ...	50	Ditto ...	Ditto ...	Kowa ...	"
45. Dhakpura ...	50	B h a rthna-Dhakupur katcha road.	Ditto ..	Dhakpura ..	"
46. Gangora Bajhera.	30	Etawah-Bharthna	Ditto ...	Mughalpur Narain.	"
47. Gansara ...	30	B h a rthna-Dhakupur katcha road.	Ditto ...	Dhakpura ...	"
48. Harkimjalpur	25	Usra Sindans ...	Ditto ...	Kudrail ...	"
49. Hathnauli ...	25	Etawah-Bharthna	Ditto ...	Mughalpur Narain.	"
50. Hindupur ...	30	Usra-Sindans ...	Ditto ...	Do. ...	"
51. Jarpur ...	50	B h a rthna-Dhakupura.	Ditto ...	Samhon ...	"
52. Kakrahi ...	30	Ditto ...	Ditto ...	Dhakpura ...	"
53. Qadumpur...	75	Etawah-Farrukhabad road.	Ditto ...	Sarsai Nawar	"
54. Kandhesi Pachar.	30	Nil ...	Ditto ...	Pali Khurd ..	"
55. Kowa ...	100	Usrahar-Sindans	Ditto ...	Kowa ...	"
56. Kantmow ...	50	Nil ...	Ditto ...	Pali Khurd...	"
57. Kudrail ...	100	Usrahar-Sindans	Ditto ...	Kudrail ...	"
58. Kontha ...	50	Ditto ...	Ditto ...	Kowa ...	"
59. Kurkha ...	70	Ditto ...	Ditto ...	Kowa ...	"
60. Kusna ...	100	Ditto	Ditto ...	Mughalpur Narain.	"

Name of village.	Estimated area over which reh extends.	Name of metalled road.	Name of canal.	Name of nearest important village.	If the area includes patches of cultivation.
	Aeres.				
61. Lahroi ...	100	Bharthna-Dhak-pura katcha road.	Lower Ganges canal, Etawah division.	Lahroi ...	Nil.
62. Masupur ...	20	Usrahar-Sindans katcha road.	Do. ...	Umersainda	"
63. Malhousi ...	100	Ditto ...	Do. ...	Malhousi ...	"
64. Maman ...	100	Ditto ...	Do. ...	Maman ...	"
65. Merhi Dudhi ...	50	Ditto ...	Do. ...	Merhi Dudhi ...	"
66. Morena ...	60	Ditto ...	Do. ...	Malhousi ...	"
67. Pali Kulan ...	100	Ditto ...	Do. ...	Pali Khurd ...	"
68. Pali Khurd ...	50	Ditto ...	Do. ...	Bharthna ...	"
69. Punja ...	30	Etawah-Farrukhabad road.	Do. ...	Punja ...	"
70. Katcheri ...	30	Bharthna-Dhakpur katcha road.	Do. ...	Sarawah ...	"
71. Rora ...	50	Usrahar-Sindans katcha road.	Do. ...	Samthar ...	"
72. Rudauli ...	30	Ditto ...	Do. ...	Maman ...	"
73. Saifi ...	30	Ditto ...	Do. ...	Umersenda ...	"
74. Ketehra ...	20	Bharthna-Dhakpur katcha road.	Do. ...	Adlepur ...	"
75. Kosara ...	20	Usrahar-Sindans katcha Road	Do. ...	Bharthna ...	"
76. Patiyet ...	10	Ditto ...	Do. ...	Takha ...	"
77. Purella ...	10	Ditto ...	Do. ...	Purella ...	"
78. Dinarpur ...	5	Etawah-Bharthna road.	Do. ...	Maghalpur ...	"
79. Ramain ...	20	Usrahar-Sindans katcha road.	Do. ...	Bholi ...	"
80. Lakhimpur Pachar.	10	Etawah-Bharthna road.	Do. ...	Maman ...	"
81. Mahmudpur	15	Ditto ...	Do. ...	Do. ...	"
82. Mureha ...	10	Usrahar-Sindans katcha road.	Do. ...	Usrahar ...	"
83. Kakrahiya ...	10	Ditto ...	Do. ...	Dhakpur ...	"
84. Nagla Bahadurpur.	5	Ditto ...	Do. ...	Bholi ...	"
85. Nagla Bhara	5	Ditto ...	Do. ...	Do. ...	"
86. Nagla Chit...	5	Ditto ...	Do. ...	Do. ...	"
87. Nagla Chaulamha.	5	Ditto ...	Do. ...	Do. ...	"
88. Nagla Gujrati.	10	Ditto ...	Do. ...	Kudrail ...	"
89. Nagla Kirathpur.	5	Ditto ...	Do. ...	Usrahar ...	"
90. Nagla Lachhi	5	Ditto ...	Do. ...	Do. ...	"
91. Nagla Lalman.	5	Ditto ...	Do. ...	Do. ...	"

Name of village.	Estimated area over which reh extends.	Name of metalled road.	Name of canal.	Name of nearest important village.	If the area includes patches of cultivation.
92. Nagla Merha	5	Usar Sindans katcha road.	Lower Ganges canal, Etawah division.	Usrahbar	Nil.
93. Nagla Phoolpur.	5	Ditto ...	Do. ...	Do. ...	"
94. Nagla Manakpur.	10	Ditto ...	Do. ...	Do. ...	"
95. Ninawan ...	20	Etawah-Bharthna katcha road.	Do. ...	Mebdi Dudhi	"
96. Santakhpur	10	Etawah-Farrukhabad road.	Do. ...	Poonja	"
97. Sarawa ...	20	Bharthna-Dhakpur katcha road.	Do. ...	Sarawa	"
98. Satnooopur ...	5	Usrahbar-Sindans katcha road.	Do. ...	Poonja	"
99. Sheikhpur Pachar.	20	Ditto ...	Do. ...	Do. ...	"
100. Siyahpur ...	10	Ditto ...	Do. ...	Bharthna	"
101. Sonthna ...	5	Ditto ...	Do. ...	Sonthna	"
102. Koura	4	Ditto ...	Do. ...	Bharthna	"
103. Tandeyhar ...	10	Ditto ...	Do. ...	Sarsai Nawar	"
104. Sujapura ...	3	Ditto ...	Do. ...	Bharthna	"
105. Bharthna ...	3	Ditto ...	Do. ...	Do. ...	"
106. Saijpur ...	20	Ditto ...	Do. ...	Do. ...	"
107. Morhi ...	5	Ditto ...	Do. ...	Morhi	"
108. Konartha ...	5	Ditto ...	Do. ...	Do. ...	"

Tahsil Bidhuna.

1. Ghasara ...	30	Achalda Bidhuna road.	Lower Ganges canal, Etawah division.	Ghasara ...	Yes.
2. Turakpur ...	15	Ditto ...	Do. ...	Achalda ...	"
3. Raisauli ...	14	Ditto ...	Do. ...	Do. ...	"
4. Gunauli ...	6	Ditto ...	Do. ...	Do. ...	"
5. Bansi ...	30	Ditto ...	Do. ...	Do. ...	"
6. Kamara ...	30	Railway Station Pata,	Do. ...	Pata,	"
7. Barchandpur	20	Ditto ...	Do. ...	Do. ...	"
8. Pata ...	25	Ditto ...	Do. ...	Do. ...	"
9. Kandhon ...	30	Ditto ...	Do. ...	Do. ...	"
10. Sriawan ...	41	Bela-Bidhuna unmetalled road,	Distributary Kansa (Cawnpore Lower Ganges canal).	Sriawan ...	"
11. Imratpur ...	16	Ditto ...	Do. ...	Do. ...	"
12. Hardoo ...	30	Ditto ...	Do. ...	Hardoo ...	"
13. Bela ...	55	Ditto ...	Do. ...	Bela ...	"
14. Bandhmow ...	16	Ditto ...	Do. ...	Bandhmow ...	"

Tahsil Bidhuna.

Name of village.	Estimated area over which reh extends.	Name of metalled road.	Name of canal.	Name of nearest important village.	If the area includes patches of cultivation.
15. Barkasi ...	Acres. 25	Bela-Bidhuna unmetalled road.	Distributary Kansna (Cawnpore) Lower Ganges canal.	Malhousi ...	Yes.
16. Barru Quelasar.	17	Ditto ..	Do. ..	Do. ...	"
17. Naibhar	14	Ditto ...	Do. ..	Do. ...	"
18. Rai-Kaithawa.	25	Ditto ..	Do. ...	Kaithawa ...	"

Tahsil Auraiya.

Name of village.	Estimated reh area.	Name of metalled road. Nearest.	Name of canal. Nearest.	Name of important village. Nearest.	If the area includes patches of cultivation.
1. Kakar Buzurg.	Acres. 37	Debiapur-Auraiya	Lower Ganges canal, Etawah division.	Kakar Buzurg	Nil.
2. Kanjri ...	28	Debiapur-Phaphund,	Do. ...	Kanjri ...	"
3. Shenganpur	62	Ditto ...	Do. ...	Shenganpur	"
4. Khanpur ... Phaphund.	14	Ditto ...	Do. ...	Do. ...	"
5. Niamatpur... Behari.	13	Ditto ...	Do. ...	Phaphund "	"
6. Kakrahi ...	29	Debiapur-Auraiya	Do. ...	Saihood ...	"
7. Jamohan ...	50	Debiapur-Phaphund.	Do. ...	Debiapur ...	"
8. Umri	12	Debiapur-Auraiya	Do. ...	Do. ...	"
9. Kishanpur... Pukhta.	37	Debiapur-Phaphund.	Do. ...	Phaphund ...	"
10. Lahokhar ...	59	Debiapur-Auraiya	Do. ...	Saihood ...	"
11. Kanchausi ...	57	Ditto ...	Do. ...	Kanchausi ...	"
12. Dohin ...	51	Ditto ...	Do. ...	Do. ...	"
13. Chamrowa ...	24	Ditto ...	Do. ...	Do. ...	"
14. Baijrapur	30	Ditto ...	Do. ...	Do. ...	"
15. Saihood ...	140	Ditto ...	Do. ...	Do. ...	Yes.
16. Baisundra ...	24	Debiapur-Phaphund.	Do. ...	Baisundra ..	Nil.
17. Jaswantpur	22	Etawah Kalpi road.	Lower Ganges canal, Bhognipur division.	Jaswantpur	"

Name of village.	Estimated reh area.	Name of metalled road.	Name of canal.	Name of important village.	If the area includes patches of cultivation.
		Nearest.	Nearest.	Nearest.	
	Acres.				
18. Mirapur—Pratap Singh.	7	Etawah-Kalpi road.	Lower Ganges canal, Bhojnapur division.	Jaswantpur	Nil.
19. Mansukhpur	8	Ditto ...	Do. ...	Mansukhpur	"
20. Bhojnapur...	5	Ditto ...	Do. ...	Bhojnapur ..	"
21. Rashangpur	2	Ditto ...	Do. ...	Rashangpur	"
22. Katghura .. Brahman.	2	Ditto ...	Do. ...	Ayana ..	"

(c) Statement showing approximate area under reh during the year 1921 :—

Tahsil.	Area under reh.	Number of Lunias working the deposits for extraction of saji and khari.	Remarks.
	Acres.		
Etawah	175	35	Saji and khari are not manufactured in this tahsil.
Bharthana ...	6,280	20	
Bidhuna ...	382	...	
Auraiya ...	1,600	...	

(ii) Saltpetre.

Tahsil.	Area under saltpetre found near old dihs (inhabited sites).	Number of workers.	Remarks.
	Acres.		
Etawah ...	95	145	
Bharthana ...	190	160	
Bidhuna ...	332	2,480	
Auraiya ...	30	140	

The area under saltpetre in the district is estimated to be about 647 acres. The saltpetre is a compound of about 5 parts nitre, 2 common salt and 3 other allied salts and insoluble matter. It is extracted in villages from old inhabited sites. The nitrous earth is scraped and then placed on a straw mat which is kept higher up by means of bamboos fixed crosswise on earth ridges. Over this water is poured, with the result that earth remains on the top and the water together with salt and other impurities filters down in a receptacle put under the mats. The liquor thus obtained is boiled in big pans and when the required saturation is obtained it is allowed to cool down. The crystals thus obtained is crude saltpetre. The crude saltpetre manufactured here is usually exported to neighbouring districts, chiefly to Farrukhabad for use in refineries there.

4.—Food grains.

(i) *General.*

Etawah and Auraiya are two big grain and ghi markets in the district. Ghi worth about 20 lakhs is annually exported.

Grain.

Marketing system.—The sale is conducted through commission agents (arhatiyas) who are either katcha or pacca. The former buy for their use or for local sale to a small extent but mostly help the actual producers to sell their grain to the pacca arhatiyas. These katcha arhatiyas get a commission of Re. 1 per cent. from the *actual producers or village petty dealers*. Very often they advance money to the villagers with a contract that their produce will be sold to them at harvest time. They have to employ servants who may be seen crowding the outskirts of the town in search of the producers of grain. These often give out the approximate rate which will be offered by their masters and then canvass for them. They get a handful of grain which is taken out of each load to the sale of which they are instrumental.

The pacca arhatiya is the exporter of grain. He either purchases it direct from the actual producers or village merchants or

through the katcha arhatiyas. He gets 0-12-0 per cent. from the purchaser. A handful of grain is again taken out at the pacca arhatiya's shop and goes to the palledar or the weighman. There is another class of convassers called dalals (brokers). These help in the disposal of local stocks in the khattis (grain pits) and get 0-2-0 per cent. on the sales.

Grain received during the course of the day if not sold is stocked with the katcha arhatiyas. Prices are settled when sales are effected. Big firms like that of Messrs. Ralli Brothers and Company give out their limits of prices. These usually guide the prices for the day.

Auraiya has about a 100 and Etawah 75 shops of arhatiyas —katcha and pacca.

Imports.

Place.	Articles.	Amount of trade.	Remarks.
Auraiya...	Wheat ...	50,000 maunds	This grain is mostly re-exported.
	Chana ...	} 2 lakh " ...	
	Arhar ...		
	Bajra ...	4 " " ...	
	Juar ...	1 " " ...	
	Urad ...	} 50,000 " ...	
	Mung ...		
	Ghi ...	10 to 15 thousand maunds.	
	Cotton ...	30,000 maunds	
	Sarson ...	1½ lakh " ...	
	Andi ...	50,000 " ...	
Cotton seed... Sewan (known as Taramira) out of which oil is extracted.	50,000 " ... 25,000 " ...		

Place.	Articles.	Amount of trade.	Remarks.
Etawah ...	Cotton ...	1 lakh maunds	The import of grain is mostly from Bhind, Orai, Mainpuri, Far-rukhabad, and Agra districts and the neighbouring villages in the Etawah district. Wheat is also imported from the Punjab.
	Wheat ...	70,000 „ ...	
	Bajra ...	2 to 3 lakh maunds.	
	Sarson and Lahi.	2 lakh maunds	
	Posta ...	2,000 „ ...	
	Chana ..	2 lakh „ ..	
	Bijhar ...	1 lakh „ ...	
Andi ...	60,000 „ ...		
Arhar ...	80,000 „ ...		
Phaphund	Bajra, Chana and Arhar.	3,000 „ ...	Imported from neighbouring places in Etawah district, and re-exported to Bombay and Calcutta.

Exports.

Place.	Articles.	Place of consignment.
Auraiya ..	Chana, arhar and wheat.	Exported to Bombay, Cawnpore, Delhi, Agra, Madras, Nasik, Messrs. Ralli Brothers being the chief purchasers.
	Bajra ...	To Bombay, Ahmedabad and Poona.
	Juar ...	To Nasik, Delhi, Meerut, Patna, Benares.
	Urad and Moong	To almost everywhere in India.
	Ghi ...	To Lucknow, Calcutta, Punjab, Rangoon and different places in India.
	Cotton ...	Cawnpore, Calcutta, Bombay, and Agra.
	Cotton seed ...	To the Punjab only.
Sarson ...	Calcutta, Bombay and Karachi.	

Place.	Articles.	Place of consignment.
Auraiya...	Andi ...	To Calcutta, Bombay, Cawnpore, Karachi, Agra. Messrs. Ralli Brothers are the chief purchasers.
Etawah ...	Grains, i.e., wheat, etc.	To Calcutta, Bombay, Rangoon, Punjab, Cawnpore, Karachi, Bengal.
	Bajra ...	Kathiawar and Gujrat.
	Arbar and Bajra	Poona and Satara.
	Sarson and Lahi	To Calcutta, Bombay and Karachi.
	Chana (Gram)...	Largely to Bombay.
Castor seed ...	Manauri (Allahabad district).	
Arhar ...	To chiefly Gujrat, Bombay, Calcutta, Madras and Rangoon.	

Etawah has 1,000 grain pits. Stocks are at present depleted and only 200 are full.

Suggestions.

(i) The markets are flooded with grain immediately after the harvesting of crop begins, as the cultivator cannot wait and has to sell his grain at whatever rates are offered to him. A co-operative institution which could stock their grains and advance money on its security to the cultivator would be a great boon. To prevent inter-mixing the grain of each cultivator could be stocked separately in bags bearing his mark. The cultivator will then be free to sell his grain at favourable rates which could be communicated to him by the institution from time to time. The institution can charge interest and other incidental charges at the time of sale.

(ii) The nearest railway station is Phaphund which is 13 miles from the Auraiya mandi (grain market). Bullock carts are as a rule utilised for carrying the goods from the mandi to the railway station. The cartage paid is 4 annas to 10 annas per bag according to the demand and supply. The supply of wagons is not regular nor timely. The East Indian Railway Company contemplated opening a branch line from Phaphund to Auraiya and the survey was completed in 1914-15. The Collector of the

district thinks that the scheme should be pushed through early and the writer agrees with him.

(iii) The chief complaint of the traders is the irregular and untimely supply of wagons. This should be remedied.

(ii) The chief agricultural produce, acreage under each crop and probable outturn (average of last five years) prices per maund, and selling rate per rupee, are as under :—

Name of crop.	Average acreage.	Average outturn per acre.	Rate per maund in 1921.			Rate per rupee in 1922.
	Acres.	Maunds.	Rs.	a.	p.	Seers.
1. Jwar ...	47,592	12½	4	15	0	9½
2. Bajra ...	143,503	10	5	11	0	8
3. Rice (ordinary)...	24,145	20	8	14	0	5⅞
4. Maize ...	45,558	12½	4	12	0	8½
5. Cotton ...	52,162	2½—7	14	0	0	3
6. Sugarcane ...	12,122	75 gur	6	0	0	3½ gur
7. Wheat ...	77,850	15	6	0	0	5½
8. Gram ...	45,853	12½	5	2	0	8½
9. Baijhar ...	96,239	13½	3	0	0	14
10. Poppy ...	3,080	9 seers	16	0	0	2½
11. Peas ...	23,518	7	3	4	0	13
12. Potatoes ...	2,222	150	2	8	0	16
13. Arhar ...	94	5	4	0	0	6

(ii) Flour Mill.

There are at present two flour mills working in Etawah city and owned by Mr. Dadabhoj Pestonjee, and Messrs. Daryao Singh Ramswarup. The daily outturn of the former mill is about 150 maunds. Mr. Dadabhoj keeps a stock of flour with him and his grinding charges have now been reduced from annas ten a maund to annas eight.

5.—Glass.

(a) General.

In the district the manufacture of glass and glass bangles is carried on at two places : Bharthana and Serai Shishagaran in Bidhuna tahsil. There is only one glass factory at Bharthana, which is owned by Sheikh Inayat Ilahi. It was started on the 17th July, 1921.

Raw material.—Sand, lime, soda, fire-clay, coal and colouring materials are all imported from Calcutta, Katni, Lohgarah, Etawah district and Bengal; crucibles are as a rule imported from Jubbulpore. About 80 maunds of block glass is manufactured daily and exported to Saharanpur, Bulandshahar and Calcutta. Glass of different colours is manufactured, such as green, *sharbati*, white, *firozi*, *dhani*, blue and yellow.

The furnace is direct-fired and has 10 crucibles.

Marketing system.—The factory has started working recently and has not established its reputation yet. It finds it difficult to sell all the glass it manufactures and the proprietor has made a request that he may be put in touch with the consumers of block glass.

Block glass is manufactured in Sarai Shishagaran with the help of reh in place of the carbonate of soda. The district abounds in reh. Before use, reh is heated in a kiln for 24 hours and the scorched reh mixed with "Sendh" (a red ferrous stone imported from Jubbulpore and Nasirabad) and saltpetre. About 2,000 maunds block glass is manufactured annually and exported to Raigarh, Bilaspur and Katni. Cost of manufacturing 400 maunds crude glass is as follows :—

	Rs.
600 maunds of reh	300
Iron scratchings	15
Fuel	100
Labour charges for 6 men at annas 8 a day per head for 15 days	45
Cost of making bhatti (kiln)	50
Total cost	510

Such glass would sell at Rs. 2-4 a maund. The glass is of a dark colour and contains many air bubbles.

Glass-bangles.

There are 14 furnaces in Sarai Shishagaran in which bangles are manufactured by 346 bangle-makers. Furnaces are maintained by all the workmen jointly. Glass is advanced by the dealers called 'Paikars' who take back the manufactured bangles

and export them to Dacca, Calcutta, Patna, Dinapore, Arrah, Allahabad, Gaya, Lucknow, Cawnpore, Basti, Ludbiana and Amritsar via Achhaldia and Bharthana railway stations. Not unoften the dealer makes advances in cash also to the bangle-maker.

For the process of bangle-making, the reader is referred to the Monograph on Pottery and Glass in the United Provinces by Mr. Dobbs.

Floral designs are made on thick bangles. This is done by spreading a white powder on the hot bangle. A desired mould is pressed and the bangle immediately held in the flames of the furnace for a while to smoothen any roughness produced by the mould on the bangle.

A man can turn out 2,500 fine churis and 1,500 thick bangles in a day. The selling price of fine bangles ranges from Rs. 0-11-0 to Rs. 0-13-0 a thousand, while that of thick ones Rs. 2 to Rs. 2-8-0 per thousand. The paikars pay Rs. 1-6-6 for making 1,500 thick bangles or Re. 1 for making 2,500 fine bangles.

6.—Haberdashery.

Horn combs.

Eleven persons of muhalla Shakhgar in the Etawah city manufacture combs. Buffalo horns are used. Horns of animals slaughtered in slaughter-houses are purchased at Rs. 8 per maund and those of dead animals at Rs. 8 per 1½ maunds. Slaughter-house outturn is 800 to 1,200 horns annually. The district consumption is 132 maunds a year.

Manufactures are—

- (a) Kanghis mostly manufactured—(i) ordinary, (ii) Likra, meant to remove dandruff, and
- (b) Kang has occasionally manufac- (iii) hollow ground—to contain oil and oil the hair and comb them in one operation.

Process.—Tip is at first removed and then horn is cut open with a knife. It is then flattened by heating it, and pressing

under a wooden beam. The flattened parts are then cleaned and made smooth with a basula and a sohan (files). It is then cut into pieces of required length with a saw. Charcoal powder is then applied to the pieces and they are rubbed vigorously with a piece of tat. This gives them a polish. Teeth are then cut with a fine saw. The comb is ready but before it is offered for sale, it is again vigorously rubbed on the palm of the hand. This gives it a finish.

Outturn.—About 36,000 horn combs are manufactured yearly and sold locally. Wholesale price is 12 combs per rupee. The retail rate is 5 to 8 for a rupee. Hollow kanghas sell at 8 annas each. Thirty combs can be manufactured out of a good horn, which can be had for Re. 1. A man can manufacture 30 combs in a day. He performs the whole process from start to finish. A man earns about Rs. 15 a month.

Suggestions—The softening process in vogue that of heating the horn does not yield good result. Perhaps a more scientific method would be by immersing horns in an acid bath. A better process of softening horns should be practically demonstrated to the manufacturers. The tips which are at present thrown away should be utilised for making buttons or knives and umbrella handles.

There is no hope of these people forming themselves into a co-operative body at present.

7.—Leather industry.

(a) *General.*—Articles of leather are manufactured in Etawah city and Bidhuna. Suit cases, leather hand bags, port-manteaux, holdalls and saddles are usually made. Attaché cases and rifle cases are also manufactured to order. In Etawah two persons, Kishan Lal and Puran Lal and in Bidhuna, Bihari, Puran and Chhedi make these leather articles themselves. Bidhuna work is superior to that of Etawah city where irregular stitches, bad finish and ill fittings of rivets and locks are generally noticed. Lining with deer skin further gives the article an uncount appearance.

Raw material.—Leather, locks, rivets, buttons, rings, cardboards, and kamani are imported by the Etawah people from

Cawnpore and Aligarh, and by Bidhuna manufacturers entirely from Cawnpore.

Finished products.—Bidhuna turns out articles worth Rs. 5,460 a year. The output of Etawah city is very much less.

A karigar makes one suit case measuring 22" × 16" and one attaché case 16" × 9" in five days. The account would stand thus:—

	Rs.	s.	p.
Leather (cow hide) from Cawnpore	13	0	0
Locks (Aligarh)	5	8	0
Rivets, buttons and rings	1	12	0
Kamani	3	0	0
Card-board (4 in number at Re. 0-9-0 weighing 3½ lbs).	2	4	0
Leather for lining	3	0	0
Labour charges for five days at Re. 1	5	0	0
	<u>33</u>	<u>8</u>	<u>0</u>
The selling prices : Rs. 24-12-0 and Rs. 12=	36	12	0
Profit	3	4	0

In Bidhuna a man makes in seven days one hand bag measuring 16", one attaché case 15" and another attaché case measuring 10".

	Rs.	s.	p.
Price of leather	14	8	0
Kamani	4	8	0
Rivets	1	1	0
Locks	5	8	0
Small rivets	0	7	6
Rings (chatkan)	0	4	0
Card-board	1	8	0
Lining (cloth)	1	4	0
Thread, etc.	0	4	0
	<u>29</u>	<u>4</u>	<u>6</u>
Wages for 7 days calculated at Re. 1-8-0 a day	10	8	0
Total	39	12	6
Selling prices Rs. 16, Rs. 15 and Rs. 10	41	0	0
Net profit	1	3	6

Export of finished products.—The sale at both places Etawah and Bidhuna is mostly local. Etawah manufacturers have recently received orders from Messrs. Nirayan Lal Bulaqi Lal, Aligarh, and Gangadhar Paulchand, Delhi.

Marketing system.—Goods are made to order. Orders are mostly received through local people.

(b) *Shoes.*—Country shoes of Salim-shahi fashion, full and half slippers of English style, and Munda shoes are also manufactured in the district.

The daily outturn of a chamar with the occasional help received from his women folk is one pair of shoes.

Two thans of cow hide and one of buffalo hide are required to make 20 pairs of Salim-shahi shoes.

	Rs.	a.	p.
Price of thans of cow hide ...	8	0	0
Do. one than of buffalo hide ...	10	0	0
Labour charges for 20 days ...	20	0	0
Miscellaneous expenses including the cost of wax, thread, etc.	4	0	0
Total ...	42	0	0
The selling price of 20 pairs of such shoes at Rs. 2-4-0 a pair.	45	0	0
Profit ...	3	0	0

Prices are :

Salim-shahi Re. 1-4-0 to Rs. 4 per pair.

Munda shoes Rs. 2-8-0 per pair.

Suggestions for improvement.—A co-operative society should be formed for the purchase of cheap material. Instruction in Government Leather Working school will enable these people to turn out articles of much better design and finish, and a course of short duration should be devised and some of these people persuaded to attend it.

8.—Miscellaneous.

(a) *Indigo.*

Area in 1921.—2,093 acres.

Production.—1,000 maunds, approximately.

No. of factories.—12 in Auraiya and 2 in Bidhuna.

Season.—August-September.

Places of export.—Bombay, Calcutta, Nagpur, Dheri in Bundelkhand, Kanauj and Jubbulpore.

Price.—Rs. 250 to Rs. 300 a maund.

The area under the cultivation of indigo is about 2,093 acres. There are about 14 factories in the district, 12 in Auraiya and the rest in Bidhuna and Etawah proper. Most of them are lying dormant at present. Some years back the manufacture of indigo was extensively practised in this district from gum obtained from dhak trees. But with the advent of synthetic dyes which yielded brighter colour and the consequent large import of such dyes from Germany into Indian market brought about the decline of this flourishing industry. An impetus was once given for the cultivation of indigo on an extensive scale during the war when the import of synthetic dyes into this country was stopped but with the cessation of hostilities and the return of the normal conditions with shipping facilities has again given a set back to this important indigenous industry. The Government of India has now exempted income from indigo manufacture from assessment of income-tax. This might help the revival of this industry a good deal.

(b) *Jail Industries.*

Enquiries show that ex-convicts do not follow the profession which is taught to them in the jails.

Durries, aloe-fibre mats, dusuti, garha, and aloe-fibre ropes are as a rule manufactured in the District Jail. Carpets are made to order only. About 3 seers oil needed for the requirements of the jail is daily expressed from sarson within the jail in an ordinary kolhu.

(i) *Aloe.*—The most important of all the manufactures is the matting woven out of fibre extracted from "dandar" a

variety of aloe plant found in abundance along the railway line. Aloe leaves are available at Rs. 6 per 100 maunds. The jail authorities pay Rs. 3 a month to the Railway Company as royalty. Fibre ropes worth Rs. 2,893 were manufactured in 1921. Mat is sold at Re. 1 (one) per square yard and rope at Re. 0-5-0 per seer. In 1920, fibre itself was sold to Messrs. Banerji and Company of Calcutta. Size of mats for jail is 6' x 2' but other sizes are also manufactured to order. A man can weave a mat 6' x 2' in one day and twist 250 yards of thin rope.

Process.—The leaves are first peeled and the green rind removed, exposing the white fibre to view. The peeled leaf is then pounded with a wooden 'mungri' and the white fibre is washed and dried by exposure to sun. The juice of the leaf is irritating. String is twisted in lengths of 300 yards and woven into mats.

Suggestions.—Aloe fibre extractors of the Chatterin type or the simple and convenient modification of same, at present used by Dr. Pendelton, Director of Agriculture, Gwalior State, will give great relief to the aloe-fibre maker. I should certainly recommend to all jail authorities, who make their own aloe fibre, this simple device which is said to be giving excellent results in Gwalior and about which necessary information can be obtained from the Director of Agriculture, Gwalior State. This aloe fibre may be utilized for weaving sack cloth.

(ii) *Durries.*—Total outturn in 1921, Rs. 1,096 worth.

Yarn of 10S is imported from Krishnagarh Mills near Ajmer. Three hundred bundles of yarn and dyes worth Rs. 29 were imported in 1921-22. Durries are sold at Rs. 2-8-0 and Rs. 3 per square yard. Two men weave a durrie 7' x 4' in five days.

The cost may be calculated as follows:—

	Rs.	s.	p.
Price of 3 seers of yarn at Rs. 1-12-0 per seer ...	5	4	0
Dyes ... ..	...	0	8
Total	...	5	12
Selling price at Rs. 2-8-0 per square yard ...	7	12	6

(iii) *Dusters*.—Dusuti dusters worth Rs. 2,420 were manufactured in 1921 for jail consumption. They are woven in pieces 40 yards \times 28 inches. One man weaves 24' in one day. Dusuti sells at 10 annas a yard. Three chhataks yarn is used in one yard of dusuti.

(iv) *Garha*.—Is woven in pieces 40 yard lengths, 3' 9" and 3' breadth. One man weaves 12 feet in a day. Price Re. 0-8-0 to Re. 0-9-0 a yard. It is mostly woven for jail consumption.

(c) *Tin-can making.*

There are two factories in Etawah City, where canisters are manufactured out of tin sheets. One is owned by Messrs. Mahesh Chandra Kundu, Bansidhar Kundu, and the other by Chaube Dhanpat Rai. The former does business to the extent of Rs. 50,000 and the latter Rs. 20,000. Cans of various sizes are turned out by the firms and are all absorbed in grocers' shops.

Tin sheets are imported from Calcutta in two sizes 20" \times 14" and 20" \times 10". Other raw materials are also imported from Bengal. Messrs. D. Waldie and Company, Cawnpore, supply nitric acid.

The cans of the following three capacities are manufactured :—

Capacity.	Material used.	Cost.	Places of export.
		Annas.	
10 seers ...	1 sheet 20" \times 14" ...	} 10	Hathras, Sirsaganj, Firozabad, Shikohabad, Auraiya, Khurja, Rohtak, and Rangoon. But a major portion is consumed by ghi exporters locally.
"	1 " 20" \times 10" ...		
5 " ...	1 " 20" \times 14" ...	} 8	
"	$\frac{1}{2}$ " 20" \times 10" ...		
2 $\frac{1}{2}$ " ...	1 " 20" \times 14" ...	6	

Process.—The process of manufacture is very simple. Three workmen are required to make a canister. One cuts the tin sheet into pieces of required length, makes grooves in them, and fits in all the sides of the can into proper grooves. The other man joins the sides with “ranga” (pewter) to make them water-tight, while the third fits up the lid.

Labour.—The factory employs 18 hands. The following table gives the particulars:—

Name.	Salary per mensem.	Minimum work expected.	Wage for extra work per 100 canisters.	Remarks.
	Rs.		Rs.	
Agent ..	50	...	...	Generally all labourers earn more than their monthly pay.
Cutter	25	50 canisters	2	
Joiner ...	20	100 „	1	
Lid-fitter	20 to 25	100 „	1	

The estimate of profits is 18 per cent.

Suggestions.—Attempt should be made to improve the appearance of the cans. Some labour saving machinery which may not be too costly needs to be introduced.

N.B.—The enormous export of ghee from this district has given an impetus to tin-can making industry in Etawah district.

9.—Other industries connected with edibles.

Fishing.

There are no regular fisheries in the district. Fish are caught in the rivers Jamna, Sengar, Ahrand, Parbhu, Pandu and Ataria. The small lakes in the villages Chit Bhawan, Rahin, Hardoi and Sirsa abound in fish. Private persons resort to these places for catching fish as a pastime. Fishing is not allowed in other private tanks on account of the religious susceptibilities of the owners. But the Municipal Board of Etawah owns a tank in the city and issues licences for fishing there on payment of Rs. 2 a month per rod.

Season.—Fish are caught in the Jamna at Etawah all the year round, but at other places, the fishing season co-extends with the winter. Fish are found in the Sengar river during rains and in other places such as Bithauli in Auraiya, Bhari and Shergarh. These are caught only in the summer.

Fishing is the subsidiary occupation of Kahars, Lodhs, and Khatiks. In Tahsils other than Etawah mallahs are also engaged in fishing. For the last 2 years some 50 to 60 kahars come to Auraiya, Chakwa, Bhugauli, Bhari and Shergarh from Etawah in Katik. The fish caught by them are preserved in ice or by stuffing with salt and other ingredients and exported to Agra, Cawnpore and Simla.

Brahmans, Vaishya, Khatries, Kurmis, Ahirs and Joshis do not eat fish. Other castes take fish but it is not their staple food. Etawah city is supplied with about 30 seers fish a day during the rains.

The fish available in the district are of the following varieties:—

Kinds of fish.	Weight.	Prices.
		Rs. a. p.
1. Rohu ...	2½ to 20 seers ...	0-3-0 to 0-4-0 a seer.
2. Narain ...	Do. ...	Do.
3. Parhin ...	2½ to 5 seers ...	0-2-0 to 0-2-6 „
4. Bhadu ...	4 seers ...	0-2-6 a seer.
5. Dighar ...	4 seers ...	0-2-6 a seer.
6. Saur ...	½ seer at the most	0-4-0 a seer.
7. Singh ...	half a pao ...	0-4-0 to 0-6-0 a seer.
8. Chal ...	of the size of a finger	0-1-0 a seer.
9. Jhinga ...	very small species	0-0-6 to 0-1-0 „
10. Baikara ...	½ to 1 pao ...	0-2-0 to 0-3-0 „

Saur and Singh are considered to be superior varieties.

No industrial use is made of the fish.

Two kinds of net are used :—

Name.	Description.	Material used.	Cost.
1. Chhatta ...	Long net with small meshes.	12 seers sutli	Rs. 6
2. Jal-ghumaua	A circular thing resembling a petticoat 25 yards in circumference with iron rings attached to it.	2½ „	10

Small fish like Singh are also caught with wicker baskets.

Fishermen generally go out in parties of two-four to catch fish. The earnings are divided at the close of the day. A man can earn about Rs. 20 a month by fishing.

10.—Textiles.

(a) Durries.

Durries are manufactured in the town of Etawah by 40 to 50 persons—most of whom live in Muhalla Katra Shamsheer-khan.

Coarse-bed-durries are usually woven from yarn of 10 to 16 counts which is doubled or tripled to obtain the necessary thickness for warps. For wefts, hand-spun yarn is usually used. It sells at Re. 1-8-0 a seer. Finer durries are generally made to order. About 3,000 durries of sizes 6'×3½' and 7'×4' are manufactured, and annually exported to Lucknow, Allahabad, Calcutta, Delhi and Meerut. The export takes place through dealers who buy durries from the weavers. Outside purchasers also come to Etawah and buy the durries for export. Weavers throng to the Indian bazaar in the evenings with their durries. If he cannot sell his durries to an outsider, the weaver has to sell it to a dealer as he cannot afford to wait. Dealers do not give the same price as a weaver expects to get by selling his durries to casual purchaser in the bazaar. One Khuda Bux, who supplies durries to the Emporium at Lucknow, goes about

personally canvassing for orders. Prices range between Rs. 4 and Rs. 12 each, depending upon the quality of the durrie and its weight. A durrie selling for Rs. 4, size 6' x 3½' would cost :—

			Rs.	s.	p.
1½ seer yarn	...	...	2	8	0
Labour (2 men)	...	...	1	0	0
Dyeing yarn	...	...	0	4	0
		Total	3	12	0

Another durrie selling price of which was Rs. 20 was said to have cost Rs. 18 as follows :—

			Rs.	s.	p.
2½ seer yarn	...	...	10	0	0
Dyeing charges	...	...	2	0	0
Labour—2 men for 3 days	...	...	6	0	0
		Total	18	0	0

(b) Ginning.

Etawah is a great cotton producing district.

Year.	Area in acres.	Estimated production.
1921-22	52,162	3,65,134 maunds.

There are 9 ginning mills in Etawah city and 2 in Auraiya. September to December is the usual season for work. The outturn of abovementioned ginning factories is 98,219 maunds of ginned cotton (rui, floss), out of which some 67,000 maunds is pressed into bales of 400 lbs. each.

The cotton ginned and pressed here is exported mostly to Cawnpore, Agra, Bombay, Hathras, Ahmedabad and Calcutta. Bhind was a supplier of a large quantity of cotton to the district. But export duty has been introduced by the Gwalior State for the last ten years, and the supply of cotton is now only local.

Wages.—Men : annas ten to rupee one and Re. 1-4-0 per day.

Women : Annas six to annas eight per day.

Cotton is ginned and pressed on commission only. The charges are :—

			Rs.	s.	p.
Ginning	...	...	2	12	0 a maund.
Pressing	...	...	7	0	0 a bale.

All the ginning and pressing factories in Etawah city have formed themselves into an association with West Patent Press Company, Limited, as its president. A pool is formed of the earnings of all the gins and profits are distributed on the number of gins in a factory.

Suggestions.—Mr. Sorab Hurmuzji thinks that the supply of cotton is not sufficient to feed all the factories. 10,000 maunds of cotton daily are required for feeding all the existing mills in this district. He attributes the shortage to inadequate supply of canal water. The matter may be brought to the notice of the Canal authorities.

(ii) Good seed and seed of long staple cotton may be distributed to the cultivators by the Agricultural department to improve the local variety. Seed is usually purchased in the bazaar and high prices have to be paid at the sowing time. The Agricultural department distributed 100 maunds seed of American cotton (C. A. 19) last year and has again distributed 50 maunds this year. This variety requires to be sown in May-June as otherwise the balls do not bloom and the tree becomes liable to attack by the leaf-roller in the moist weather. It is therefore essential for an expansion in the cultivation of the variety that canal water be available in May-June. The Superintendent in charge of Etawah Agricultural farm thinks that the cultivators do not get sufficient water at that time. The matter deserves the attention of the Canal authorities.

(iii) The cultivators and exporters not unoften sprinkle water on the cotton to increase its weight. This makes lint weak and spoils the seed. The purchaser suffers and offers low price. The ginning percentage is also low with the moist cotton. This should be brought to the notice of the cultivators.

(iv) It will be a great advantage to all concerned if inferior and superior varieties of cotton were kept separate. A good price will then be obtained for superior variety.

(v) There is sufficient raw material in the district to feed a good spinning mill. The consumption of yarn in the district comes to more than 25,000 maunds a year. The possibility of starting such a mill was discussed with several leading citizens

of the district. They all feel its desirability. But capital in the province is shy. If some enterprising gentleman from Cawnpore goes to Etawah and tries to organise a spinning mill he is likely to succeed.

(c) *Hand-loom weaving.*

The district has about 5,000 actual workers. Hindu Parsutias, and Kolis and Muhammadan Julahas. Parsutias are considered to be the cleverest of the three and Julahas come next. Both manufacture *dhoties*, shirtings, coatings, etc., while Kolis confine themselves to Garha manufacture. Kolis are part-time workers, as they pursue other occupations also like that of thatching, etc. The number of looms in the district is 248 fly-shuttles and 1,000 ordinary throw-shuttles. Women help in sizing and other preliminaries but in Jaswantnagar women weave while men do the sizing.

Yarn.—Etawah imports about 5,000 bales of yarn annually while Jaswantnagar alone gets over 2,600 bales. Imports into the Etawah municipality are subject to octroi duty, and it is believed that a lot of yarn is smuggled into the municipal area in small lots from Jaswantnagar, Bharthana or Phaphund. Yarn of counts $10\frac{1}{2}$, 16, 32, 40, 20, 34, $6\frac{1}{2}$ and $8\frac{1}{2}$ is mostly imported from Agra, Cawnpore and Ahmedabad. The current prices are :—

		Rs.	a.	p.	to	Rs.	a.	p.	
$6\frac{1}{2}$ counts	...	7	12	0		8	0	0	per bundle.
$8\frac{1}{2}$ "	...	8	0	0	„	8	4	0	„
$10\frac{1}{2}$ "	...	8	2	0	„	8	12	0	„
$16\frac{1}{2}$ "	..	10	0	0	„	11	8	0	„
20 $\frac{1}{2}$ "	...	11	4	0	„	14	0	0	„
34 "	...	16	0	0	„	17	0	0	„
40 "	...	17	0	0	„				„

The following table shows the different kinds of yarn used in the manufacture of different kinds of cloth :—

10 $\frac{1}{2}$ s and 16 $\frac{1}{2}$ s	...	...	Garha.
20s and 16 $\frac{1}{2}$ s	...	...	Sallam.
32s, 34s and 40s	...	...	Dhoties.

The manufacture of cloths from mercirised and waste silk yarn has recently been introduced in Etawah. The best known of these are: (1) dorias (shirtings from mercirised yarn or ordinary wefts with mercirised warps) and (2) and is from waste silk yarn.

Silk and mercirised yarn is imported from Benares. The following table shows a few varieties of cloth manufactured in Etawah, their sizes and average prices :—

Description.	Length and breadth	Prices.
1. Battu for ladies petty-coats.	10 yds. 14 girahs ...	Rs. 3 to Rs. 8.
2. Doria ...	12 ,, 14 girahs to 1½ yds.	,, 4 to ,, 12.
3. Malmal ...	12 ,, 1½ yds. ...	,, 6 to ,, 10.
4. Garha ...	16 ,, 14 girahs ...	,, 4 to ,, 8.
5. Sallam ...	12 ,, 14 girahs to 1 yd.	,, 4 to ,, 12.
6. Dhotis ...	A pair of 10 yds. by 1½ yds.	,, 4 to ,, 7.
7. Safa ...	7 yds. × 8 girahs	,, 1 to ,, 2-3.
8. Rumal ...	14 girahs square ...	,, 3 to ,, 5 a dozen.
9. Dhup-Chhon (Sun-proof).	12 yds. ...	,, 4 to ,, 6.
10. Andi (made of Japanese silk yarn).	7 ,, ...	,, 12 to ,, 13.
11. Khaddar silk (a kind of silk cloth locally known as Alpaca made from Benares silk yarn).	7 ,, ...	,, 13.

The total production of the district is estimated to be 3 lakhs worth. It is mostly exported to Meerut, Lucknow, Cawnpore, Calcutta, Allahabad, Agra, Bombay and Bind in Gwalior State.

A kind of cloth manufactured from the fibre of aloe plant was noticed at the shop of Lachman Prasad Hulas Rai. But it is not appreciated. It is said that it does not wear well. Rice starch is used for sizing.

Marketing system.—The weavers throng in the cloth market and the gudri in the evenings with the bundle of their cloths. Generally the dealers who have regular shops in the market are tried first. The weaver takes the cloth to the dealer, who makes an estimate of the cost by taking into consideration the approximate weight of the cloth, the counts of yarn used and the weaving charges. The whole process of estimating the cost does not take the dealer more than a few seconds. Having made his calculation, the dealer makes his offer one two or three. If it is acceptable to the weaver, the price is settled. If not, the weaver takes his cloth to the gudri where purchasers other than regular shop-keepers come to buy cloth. The dealer gets a commission of 1 pice per rupee on retail sale and 1 per cent. on wholesale exports.

One man can weave in a day 10 yards medium and 12 yards coarse cloth on a fly-shuttle loom. Ten to 9 yards is the average production on a throw-shuttle loom.

Cost of making a piece of doria (striped) cloth 12 yards \times 36 inches is as follows :—

			Cost.		
			Rs.	s.	p.
20s yarn—one seer	...	...	2	8	0
Labour (weaving charges)	...	...	1	8	0
Sizing	...	...	0	4	0
Warping and sundries	...	...	0	12	0
			<hr/>		
Total	...	...	5	0	0
			<hr/>		

This would sell for Rs. 6.

The non-co-operation movement has pushed sale of Swadeshi cloth and an average weaver is now earning as much as Re. 1-8-0 a day. The condition of weavers has improved considerably and now they are able to stock their goods in slack season and wait for adequate prices.

Suggestions for improvement.—A weaving school in a place like Etawah which is a centre of the weaving industry is a great necessity. It will be able to improve the designs and patterns of cloth. Small hand-loom weaving factories are a great necessity of the district.

CHAPTER III.

POSSIBILITIES OF THE DISTRICT.

1.—Food-grains.

(a) Phaphund railway station is 13 miles from Auraiya grain market to where goods are as a rule carried on carts for export outside the district. The cartage paid is 4 annas to 10 annas per bag. The East Indian Railway Company contemplated opening a branch line from Phaphund to Auraiya. When this scheme will become mature, the grain business at Auraiya will improve considerably. Railway authorities may be asked to push through the scheme.

(b) The chief complaint of the traders is the irregular and untimely supply of wagons. Steps should be taken to improve the situation.

2.—Glass.

A factory for the manufacture of block glass has recently been opened in Bharthna, but the chief place for it is Serai Shishgaran. Both block glass and Churis are manufactured there but the industry is in the hands of middlemen. A co-operative society would not succeed as the dealers are only capitalist artisans who would raise opposition for their own ends, unless a central bank is prepared to finance the workers and free them from the influence of the dealers.

3.—Horn combs.

The practice of softening the horns by heating them does not yield good result. The more scientific method would be by immersing horns in an acid bath. This process should be practically demonstrated to the manufacturers. The tips which are at present thrown away should be utilized in making buttons, knives and umbrella handle, and horn dust should be utilised as manure in potato and sugarcane fields. The raw material

is available in abundance and there is great possibility of developing this industry.

4.—Leather.

Suit cases, portmanteaux and gladstone bags are manufactured at Etawah and Bidhuna. But the production is not large enough to secure for the mochis appreciably large profits to make them feel drawn towards this particular industry. If a co-operative society of the leather workers at Bidhuna is organised and a little training in design and finish is provided, there is every possibility of their securing larger orders for their production and thus expanding their business.

5.—Indigo.

The manufacture of vegetable indigo was extensively practised in the district, and it is studded with dormant factories. The cultivation fell on account of a decline in the demand for the vegetable indigo in competition with the synthetic dye imported from Germany. But the import of synthetic dye was stopped during the war and with the shortage of the dye in the market, the cultivation of indigo was again taken up. The province manufactures indigo in a very primitive fashion and the yield per acre is much less than that of Behar. Investigations have lately been started at the Research Institute at Pusa by the Indigo Research Chemist to the Government of India to improve the cultivation and manufacture of indigo. The Etawah manufacturers of indigo will be well advised to join the Indian Indigo Co-operative Association established in Calcutta in order to promote by co-operative methods the sale of indigo and to assist further research and propaganda.

6.—Reh.

The district has about 8,000 acres under "reh" which is used as a substitute for pure carbonate of soda imported into this country. It will be worth while to attempt manufacturing carbonate of soda in this district where "reh" is found in abundance.

7.—Spinning mill.

Etawah is a big cotton producing district—the annual production being about 2 lakh maunds. It possesses 11 ginning factories where raw cotton is ginned and baled for export. All the cotton produced in this district is exported and yarn more than 25,000 maunds is imported from outside for handloom weaving which is the most important industry of the place. There is sufficient raw material in the district to feed a good spinning mill. The possibility of starting such a mill was also discussed with several leading citizens who unanimously agreed to Etawah being a suitable place for it. With further expansion of handloom weaving in the district for which there is ample scope considering the number of weavers which was 5,000 males in 1911, and it is believed that the number has increased on account of non-co-operation movement, and facilities for sale of their production, still larger quantity of yarn will have to be imported from outside. It will then be very convenient to the dealers and weavers to draw upon the local mill for yarn and thus save the expenses of transit. At the same time, the mill will find ready market for its production in the district itself as cotton is available in the district in ginned form and there is a market for the yarn. It is believed that with a little effort an organization will succeed.

8.—Handloom weaving.

Etawah is already a centre of this industry and its cloth has gained celebrity for its durability and improved designs all over the upper districts of the Doab. Different varieties of cloth suitable for shirtings, coatings, dhotis and dorias have come to be woven by the julahas and parsutias, who were above 5,000 in number in 1911. It would be no wonder if side by side a spinning mill offering facilities for the supply of yarn the handloom weaving of the district should expand considerably, and small handloom factories that may spring up in consequence may prosper very well. Rai Shiva Prasad Bahadur, Babu Chironji Lal, Honorary Magistrate and Manager of the newly started District Co-operative Bank and Lala Suraj Narain Agarwal

seem to be very keen over having small handlooms in the district and their effort to organise one for the present may lead others to follow in their footsteps. A weaving school for Etawah is a necessity and it is a pity that the school has been abolished. A dyeing school is also required as Etawah city and district consume large quantities of dyed yarn.

9.- Sack cloth weaving from aloe fibres.

The plentiful growth of aloe fibre leaves along the railway line affords possibilities for the development of a totally new industry in the district. The fibre is at present utilised only in jail to a small extent in the manufacture of mattings. But it can also be more profitably utilised by weaving sack cloth out of it. There is ample scope for increasing aloe plantations if a demand for them increases.

CHAPTER IV.

STATISTICS.

1.—Art Industries.

Peacock feather fans.

Number of workers.—About 20.

Import of raw material.—80 maunds from Ahmadabad, Jaipur, Jodhpur, Alwar and Bikaner.

Export.—60 maunds fans to Sialkot, Darbhanga, Calcutta, Lucknow, Fyzabad, Delhi, Hyderabad, Muttra, Ambala, Bareilly, Bhagalpur, Benares, Agra, Cawnpore, Jullundar, Peshawar, Quetta, Amritsar, Ludhiana, Gaya, Multan, Bombay and Karachi.

20 maunds feathers to Calcutta.

Season.—October to February. Sales are conducted in summer (March to July or August.)

Daily outturn.—One man can manufacture 50 ordinary or 25 fancy fans.

Margin of profits.—50 ordinary fans, Re. 1-12-7.

25 fancy fans, Rs. 3-10-9.

Marketing system.—Dwarka Kahar and Mangli Prasad export feathers through one Sri Ram of Calcutta to European countries France and China. No middle-men employed for sale of fans. The workers themselves visit several places.

N.B.—In this industry the males are assisted by females.

2.—Glass.

(i) *Mr. Inayat Elahi's Glass Factory at Bharthna.*

<i>Raw material : Import.</i> —Soda	...	8,640	cwts.
Sand	...	24,000	maunds.
Lime	...	360	„
Saltpetre	...	540	„
Coal	...	1,296	Tons.
Fireclay for 100 pots.			
Colouring material	Rs.	36,000	
worth.			

<i>Place of origin.</i> —Soda	... Calcutta.
Sand	... Lohgara.
Lime	... Katni.
Saltpetre	... Local.
Fire-clays	... Jubbulpore.
Coal	... Bengal.
Dyes	... Cawnpore.

Export.—28,800 maunds.

Place of consignment:—Saharanpur, Bulandshahr and Calcutta.

Local use:—A good quantity of glass is used in making glass bangles in Sarai Shishgaran.

Manufacture.—Small factory.

Working capital, Rs. 35,000.

Labour—

Number of hands, 50.

Wages and system of payment—

One mistry at Rs. 2 a day.

Two mistries at Re. 1-8-0 a day each.

One mistry at Re. 1 a day.

Forty-six men at Re. 0-10-0 a day each.

Annual total expenditure, Rs. 11,970.

Total outturn, 28,800 maunds.

Remarks.—When the supply of coal or any other material runs short, the factory cannot work but the labour charges have to be paid as usual. This has brought loss to this factory as the proprietor alleges. Such stoppages have not been infrequent owing to the irregular supply of waggons.

(ii) *Glass bangles.*

No. of workers, 346.

Import of crude glass.—Local.

Export of bangles.—Dacca, Calcutta, Allahabad, Patna, Dinapur, Arrah, Gaya, Lucknow, Ludhiana, Amritsar.

Daily outturn of a workman, 2,500 fine and 1,500 thick bangles.

Prices of bangles.—Fine bangles annas 11 to annas 13 a thousand, thick bangles Rs. 2 to Rs. 2-8-0 per thousand.

Daily earnings of a workman.—Between Re. 1 to Re. 1-6-6.

3.—Haberdashery.

Horn combs.

Import of raw material.—More than 1,200 horns. Local.

Export of combs.—The manufacturers sell combs to local wholesale dealers.—Annual production 36,000 combs.

No. of workers.—11.

Daily outturn of a worker.—30 combs.

Wholesale price of combs.—12 per rupee.

Retail price of combs.—8 per rupee.

Average monthly earnings of a worker.—Rs. 15.

4.—Leather.

(i) *Articles made.*—Suit cases, leather hand-bags, portman-teaux, holdalls, saddles.

Raw-material imported.—From Cawnpore and Aligarh.

Finished product exported.—Sold locally within the district. Aligarh and Delhi orders have been supplied. Value of export above Rs. 6,000.

Marketing system.—Goods are generally made to order. Orders are mostly received through local people.

Margin of profit in a suit case.—Rs. 3-4-0.

(ii) *Statement showing slaughter-house bye-products.*—

Name of dealer.	Article.	Annual outturn.	Where exported and their disposal.
Badullah chowdhri.	Hides of buffalo, etc.	500 hides...	Cawnpore.
Imam Bux ...	Do. ...	400 ,, ...	Do.
Khuda Bux ...	Bones ...	5 waggons	Agra.
Do. ...	Horns ...	1,200 ...	Purchased by local comb manufacturers.

Name of dealer.	Article.	Annual outturn.	Where exported and their disposal.
Khuda Bux ...	Hair ...	...	Agra, Ropes are manufactured by butchers.
Do. ...	Hoofs ...	...	Agra.
Do. ...	"Tant" or (Gut).	...	Khaticks use it in the manufacture of w i n n o w e r s (scoop).

5.—Miscellaneous.

Tin-can making factory of MESSRS. MAHESH CHANDRA
KUNDU BANSIDHAR KUNDU.

Raw Material:—

A.—Import.

(a) Quantity:—

1. Sheets of tin	...	...	156,900	maunds.
2. Pewter	...	...	60	"
3. Lead	...	...	100	"
4. Acid Muriatic	...	...	Rs. 500	worth.
5. Rajan	...	...	" 200	"
6. Coal	...	...	400	maunds.
7. Rope	...	...	Rs. 400	worth.
8. Zinc	...	...	" 40	"

(b) Places from which imported:

(1) Calcutta, and (2) Cawnpore.

(c) Value:—

			Rs.
1. Tin sheets	...	...	30,000
2. Pewter	...	...	6,000
3. Lead	...	...	1,600
4. Muriatic acid	...	...	500
5. Rajan	...	...	200
6. Coal	...	...	800
7. Rope	...	...	400
8. Zinc	...	...	40
Total	...	...	<u>39,540</u>

B.—Export.

- (a) Quantity : 70 to 80 thousand cans in a year.
- (b) Places of consignment : Hathras, Sirsaganj, Ferozabad, Shikohabad, Auraiya, Rangoon, Khurja and Rohtak.
- (c) Value : Fifty thousand rupees.

*C.—Local use :—*These cans are sold locally to big paris who purchase ghee locally.

*Manufacture :—*Work is carried on a factory basis.

- (a) Working capital : Rs. 25,000.
- (b) Labour :—(i) Number of hands engaged : 18,
(ii) Wages and system of payment : Payment is by time, and wages range between Rs. 20 and Rs. 25 a month.
- (c) Total outturn in weight or price : Rs. 50,000.

6.—Textiles.

(i) *Cotton ginning and pressing.*

Gumadia ginning factory, Auraiya.

*Raw material, import.—*Quantity 18,000 maunds of Kapas.

Place of origin, Etawah district.

*Export of cotton.—*Ginned and pressed.

Quantity : Rs. 6,000 maunds ginned and Rs. 1,682 bales pressed.

Place of consignment : Bombay.

*Manufacture, Labour.—*No. of hands 160.

*Annual outturn.—*Cotton ginned 6,000 maunds, valued at Rs. 2,10,000, and bales pressed nos. 1,682.

*Gin Engine.—*H. P. 14. 4 N. H. P.

*Press Engine.—*N. H. P. 31 C.

*Capital.—*Two lacs of rupees have been invested in this mill over building and machinery.

Cotton Ginning and pressing.

(ii) *New Mufassil Company, Limited, Auraiya.*

*Raw material, import.—*Quantity 18,528 maunds Kapas.

Place of origin : Etawah, Cawnpore and Jalaun district.

*Export of cotton.—*Ginned and pressed.

Quantity 6,176 maunds of cotton ginned, and 1,690 bales pressed.

Place of consignment : Bombay and Calcutta.

Manufacture Labour.—

1. Number of hands 160.

2. Wages and system of Payment : - The total annual wages monthly and daily come to Rs. 22,380.

Annual outturn.—Cotton ginned 6,176 maunds, and bales pressed nos. 1,690.

H. P. of engine used.—49 H.-P.

Capital.—About Rs. 89,427 have been invested in the mill over the building and machinery.

(iii) *Hand-loom Weaving.*

(a) *Cloth.*

Numbers of looms.—About 1,000 throw-shuttles and 248 fly-shuttles.

Number of workers.—About 5,000.

Quantity of yarn imported.—Above 5,000 maunds from Agra, Cawnpore and Ahmedabad ; silk yarn is imported from Benares.

Export of cloth.—About three lakhs worth of cloth is exported to Meerut, Lucknow, Cawnpore, Allahabad, Calcutta, Agra, Bombay and Bind in Gwalior State.

Daily outturn of a workman.—Ten yards medium and 12 yards coarse cloth on fly-shuttle looms and 10 to 9 yards on throw-shuttle loom.

Marketing system.—Vide chapter II (notes on handloom weaving).

N.B.—In Etawah and other places, women help in sizing and other preliminaries, but in Jaswantnagar, women weave while men do the sizing.

(b) *Durries.*

Number of persons engaged in manufacturing durries, 40 to 50. Outturn (annual) 3,000.

Export.—To Lucknow, Allahabad, Calcutta, Delhi and Meerut.

Marketing system.—The export mostly takes place through dealers who buy durries from the weavers. Outside purchasers also come to Etawah and buy durries for export.

Prices.—From Rs. 4 to Rs. 12.

Margin of profits. About 6½ per cent.

CHAPTER V.

DIRECTORY.

(1) *List of principal manufacturers of peacock feather fans.*

1. Mangli Prasad, Chiri-mar Tola, Etawah.
2. Khushali " "
3. Daulat " "
4. Khamani " "
5. Dhanna " "
6. Dwarka " "

(2) *List of brick-kilns.*

Name of owner.	Rate per 1,000. Rs.	Outturn in value. Rs.
1. Ahmad Husain, Etawah ...	14	16,800
2. Nisar Ali (Anwar) Etawah ...	14	16,800
3. Parshotam Singh & Co., Etawah ...	14	16,800
4. Lalman, Brahman, Etawah ...	14	11,200
5. Suraj Prasad Mahajan, Sisahat, Jaswantnagar ...	10	1,500
6. Har Kishan Das and Ghanshyam Das, Jaswantnagar ...	10	1,500
7. Ram Sahai of Lakhna ...	15	1,500
8. Poono Khan, Bharthna ...	10	1,000
9. Lakkhi, Dhobi Bharthna ...	10	1,500
10. Raham Elahi, Takha ...	12	1,800
11. Shaikh Inam Elahi, Bidhuna ...	14	1,750
	12	600
	8	1,000
12. Lala Lachmi Narain, Phaphund ...	10	2,000
13. Girdhari Das, Mahant, { Brahman, {	10	Phaphund 3,500
		Purwa Baba 5 1,000
14. Shaikh Inam Elahi, Auraiya ...	14	17,500
	10	5,500

(2) *List of brick-kilns—(concl'd.)*

Name of owner.	Rate per	Outturn in
	1,000.	value.
	Rs.	Rs.
15. Khuda Bux and Ramzan, Auraiya	{ 10	7,000
	{ 6	1,800
16. Sita Ram, Gyanpore	... 10	6,000
17. Inam Elahi, Gyanpore	... 10	110
18. Rahim Uddin, Phaphund	... { 10	2,000
	{ 5	500
19. Mohammad Bux, Phaphund	... { 10	2,000
	{ 5	500

(3) *List of principal grain-dealers at Etawah and Auraiya.*

- | | |
|---------------------------------------------------------------------|-----------------------------------|
| 1. Dhanji Dadabhoy. | 21. Shantilal Harkishandas. |
| 2. Usuf Muhammad Abuwath. | 22. Bakhshi Ram Kirpa Ram. |
| 3. Shushi Bhushan Neogi. | 23. Kidar Nath Braj Kishore. |
| 4. Jima-bhoy Bhanji. | 24. Harnath Harish Chandra. |
| 5. Ismail Nur Muhammad. | 25. Mewa Ram Sewa Ram. |
| 6. Tar Muhammad Tayab. | 26. Hulas Rai Bhagwandas. |
| 7. Adhrabman Ahmad. | 27. Basant Lal Bishambar Dayal. |
| 8. Ahmad Mannuji Bange. | 28. Raja Bahadur Ram Swarup. |
| 9. Narbe Ram Jiwan. | 29. Ram Kisban Ram Dayal. |
| 10. Ibrahim Salaeman Sahji. | 30. Baldeo Sahai Jagannath. |
| (It is said that this big firm has gone into liquidation recently). | 31. Dada Bhoy Pestonji. |
| 11. Chhote Lal Jumi Lal. | 32. Babu Jasoda Nand Madho Jiwan. |
| 12. Moolohand Ajudhiya Prasad. | 33. Ram Din Baldeo Sahai. |
| 13. Lala Nand Kishore. | 34. Kanhaiya Lal Baldeo Prasad. |
| 14. Munna Lal Dwarka Das. | 35. Darshan Singh Murli Manohar. |
| 15. Bansi Dhar Kundu. | 36. Umashankar Bijey Bahadur. |
| 16. Muhammad Yakub Muhammad Fairukh. | 37. Gokal Prasad Chbaki Lal. |
| 17. Maku Lal Thakurdas. | 38. Ram Prasad Ram Dayal. |
| 18. Jawahar Lal Jagannath. | 39. Janki Prasad Jagannath. |
| 19. Bhateley Shyam Behari. | |
| 20. Khubi Ram Ganesh Das. | |

(3) *List of principal grain-dealers at Etawah and
Auraiya—(concl'd.).*

- | | |
|--------------------------------|----------------------------------|
| 40. Ram Bakhsh Bhikari Lal. | 53. Basti Ram Raghunath Prasad. |
| 41. Lalman Durga Prasad. | |
| 42. Nopchand Mangin Ram. | 54. Jhumman Lal Rameshwar Dayal. |
| 43. Lachhman Das Ghasi Ram. | |
| 44. Ram Gopal Ram Charan. | 55. Mata Din Panna Lal. |
| 45. Baldeo Prasad Bhaggilal. | 56. Raman Lal Baldeo Das. |
| 46. Rup Ram Chandi Lal. | 57. Moolchand Kundan Lal. |
| 47. Gauri Shankar Siva Prasad. | 58. Fateh Ram Ram Prasad. |
| 48. Nanak Chand Padam Chand. | 59. Chhedi Lal Badri Prasad. |
| 49. Kanhaiyalal Gopi Nath. | 60. Ram Dayal Shambhu Dayal. |
| 50. Mansa Ram Mangli Prasad. | 61. Mathura Prasad Phakri Lal. |
| 51. Ram Gopal Shankar Lal. | |
| 52. Ram Swarup Radha Kishan. | 62. Ram Swarup Darbari Lal. |

(4) *List of Block-glass manufacturers.*

- | | |
|---------------|--------------------|
| Hussain Mian, | Sarai Shishagaran. |
| Najim-ud-din, | " |
| Sardar Khan, | " |
| Alla-ud-din, | " |
| Habib Khan | " |
| Inayat Ilahi, | " |

(5) *List of 'Paikars' or principal dealers who advance glass to different workmen and get bangles prepared by them.*

- | | |
|-----------------------|--------------------|
| 1. Alla-ud-din, | Sarai Shishagaran. |
| 2. Maman Haji, | " |
| 3. Fakhr-ullah, | " |
| 4. Mohammadu, | " |
| 5. Habib Khan, | " |
| 6. Abdul Ghani, | " |
| 7. Ghazi, | " |
| 8. Kallu, | " |
| 9. Rahmat-ullah, | " |
| 10. Sh. Inayat Ilahi. | " |

(6) *List of Bhattis for manufacturing glass-bangles in Sarai Shishagaran.*

Alaf Khan.	Abdullah.
Ilahi.	Razzaq.
Husain Bakhsh.	Habib Khan.
Qumr-ud-din.	Ghazi.
Azeez.	Allahdin.
Hakim.	Nuri.
Kallu.	Safr-ud-din.

(7) *List of Ginning and Pressing mills in the district.*

1. West Patent Press Company, Limited.
2. New Moffassil Company, Limited.
3. Sardool Ginning Factory.
4. Prushottam Ginning Factory.
5. Nand Kishore Jagannath Ginning and Pressing Company.
6. Messrs. Mannulal Kanahaiyalal.
7. Shyam Ginning Factory.
8. Shri Narain Lachmi Narayan Ginning Factory.
9. Messrs. Juggilal Kamapat.
10. New Moffassil Company, Limited, Auraiya.
11. Gamadia's Ginning Factory, Auraiya.

(8) *List of durrie manufacturers in Etawah.*

1. Lal Khan Chowdhri.	8. Dhuman Shah.
2. Khuda Bakhsh.	9. Kallu Shah.
3. Ahmad Khan.	10. Chhumma Shah.
4. Nazir Khan.	11. Jahangir Khan.
5. Nathu Khan.	12. Dulla Shah.
6. Ahmed Khan, 2nd.	13. Razzak.
7. Abdulla Shah.	14. Fayaz.

(9) *List of yarn dealers.*

1. Mangni Ram, Jaswantnagar.
2. Nanhe Khan, „
3. Shiva Shankar, „
4. L. Ram Dayal, „

(9) *List of yarn dealers—(concl'd).*

- | | |
|-------------------|---------------|
| 5. Bashir Ahmad, | Jaswantnagar. |
| 6. Babu Lal, | " |
| 7. Yusuf, | " |
| 8. Lalman, | " |
| 9. Puran, | Etawah city. |
| 10. Khunnu Lal, | " |
| 11. Abdul Rahman, | " |
| 12. Jwala Prasad, | " |
| 13. Mohan Lal, | " |
| 14. Mathri, | " |
| 15. Umasingh, | " |
| 16. Sundar Koli, | " |
| 17. Nand Ram, | " |
| 18. Jawahar Lal, | " |
| 19. Jagannath, | " |

(10) *List of comb manufacturers.*

- | | |
|-----------------|--------------|
| 1. Wazir, | Etawah city. |
| 2. Maula Baksh, | " |
| 3. Idu, | " |
| 4. Mahbub, | " |
| 5. Nainu, | " |
| 6. Chhotey, | " |
| 7. Murad, | " |
| 8. Aziz, | " |
| 9. Rayaz, | " |
| 10. Kallu, | " |
| 11. Husainu, | " |

CHAPTER VI.

MISCELLANEOUS.

1. Octroi duty on exports and imports within the municipality is as under :—

Re. 0-8-0 per cart load containing every sort of timber, grain seeds or other articles of high value.

Re. 0-2-0 per cart load containing fuel wood or wood of inferior quality.

2. Railway freights on important commodities imported or exported : in and from Etawah—

Name of article.	Station to which sent.	Railway rate charged per maund.		
		Rs.	a.	p.
Ghee ...	Howrah ...	1	9	8
	Surat ...	1	8	7
Castor oil seeds...	Howrah ...	0	9	8
	Karachi ...	0	12	7
	Manauri (near Allahabad) ...	0	4	11
Rape-seed ...	Karachi (via Kuchawan Road) ...	0	12	7
	Howrah ...	0	9	7
	Bari Bandar (Bombay) ...	0	12	7
Bajra ...	Ahmedabad ...	0	15	2
	Barouch (Gujrat) ..	0	15	7
	Baroda ..	0	15	1
	Mangawan ..	0	15	4
	Multan (Punjab) ...	0	13	8
	Rohtak ..	0	5	11
	Gujar Khan ..	0	13	5
	Bhatinda ..	0	9	5
	Tahana ..	0	8	0
Bombay (Bari-Bandar) ...	0	12	7	

Name of article.	Stations from which received.	Railway rate per maund.		
		Rs.	a.	p.
Arhar	Howrah (Calcutta)	0	9	7
	Jagraon	0	10	3
	Sirhind (via Ghaziabad)	0	9	3
Wheat	Meerut	0	5	6
	Kot-Kapura (via Delhi)	0	9	11
	Bhatinda	0	9	5
	Jarranwala	0	12	4
	Muzaffarnagar	0	6	6
	Shamli (Sahdara-Saharanpur Light Railway).	0	6	10
Barley	Amroha (via Aligarh)	0	7	4
	Bholagunj (via Cawnpore)	0	7	7
	Hardoi (via Cawnpore)	0	7	0
	Bhagauli (via Cawnpore)	0	6	6
	Chandausi (via Aligarh)	0	9	10
	Babrola (via Aligarh)	0	5	3

3. Railway freight for bangles to chief places of export from Achhalda :—

Place.	Railway freight per maund.		
	Rs.	a.	p.
Gaya	1	5	4
Arrah	1	4	0
Patna	1	5	11
Howrah	1	2	4 (special rate).
Cawnpore	0	3	11
Gualando	1	9	5
Baiswarah	0	6	11
Biswan	0	10	9
Bihar Sharif	1	3	11

4. Railway freight for grains from Phaphund to the places noted against each :—

Name of grain.	Place of consignment.	Railway freight per maund.		
		Rs.	a.	p.
Grain seeds	Calcutta	0	9	4
	Bombay (via Cawnpore)	0	13	3
	Madras	1	10	9

Name of grain.	Place of consignment.			Railway freight per maund.		
				Rs.	s.	p.
Grain seeds	...	}	Poona	...	...	1 1 2
			Ahmedabad	...	...	1 0 6
			Nasik road	..	...	1 0 8
			Meerut City	...	...	0 5 3
			Karachi	...	...	0 13 10
			Benares	...	...	0 6 7
Ghee	...	}	Delhi ...	...	...	0 4 11
			Lucknow	...	...	0 6 2
			Calcutta	...	...	1 2 9
Cotton	...	}	Cawnpore	...	...	0 3 6
			Bombay	...	...	2 0 6
			Calcutta	...	...	1 12 6
			Agra ...	...	...	0 6 3

5. Railway freight for feathers and fans from Etawah to place of export:—

Place of Export.	Railway freight per maund.			
	Rs.	s.	p.	
Calcutta	7 5 0
Cawnpore	1 7 0
Peshawar	7 12 0
Howrah	7 1 0
Delhi	2 13 0
Agra	1 1 0
Benares	3 3 0
Ambala	3 3 0
Amritsar	4 10 0
Ludhiana	4 15 0
Muttra	1 13 0
Quetta	8 13 0
Jullundhar	4 4 0
Katni	4 4 0
Hydrabad Deccan	12 11 0
Hydrabad Sindh	11 10 0

6. *List of census (industrial) workers in the district.*

1. Cotton-ginning, cleaning, and pressing	...	2,003
2. Cotton-spinning, sizing, and weaving	....	15,409
3. Jute-spinning and weaving	... ..	21
4. Rope	... ..	262
5. Other fibres	... ..	32
6. Woll carders, etc.	... ..	109
7. Hair and bristles work	... ..	49
8. Feathers	... ..	38
9. Dyeing, bleaching and printing	... ..	1,085
10. Lace, crape, finges, etc.	... ..	204
11. Tanners, cureers, etc.	... ..	3,314
12. Makers of leather articles	... ..	28
13. Bone, ivory, horn, etc.	... ..	39
14. Sawyers, carpenters, etc.	... ..	6,770
15. Basket makers, etc.	... ..	2,463
16. Makers in iron, etc.	... ..	3,399
17. Makers in brass, etc.	... ..	410
18. Makers in other metals	... ..	88
19. Makers of glass	... ..	237
20. Potters, etc.	... ..	5,032
21. Brick and tile makers	... ..	62
22. Manufacturers of explosives	... ..	63
23. Rice pounders, and flour grinders	... ..	8,606
24. Hat, cap and turban makers	... ..	61
25. Tailors, etc.	... ..	4,339
26. Shoe, boot and sandal makers	... ..	2,793
27. Cabinet makers and carriage painters	... ..	286
28. Lime burners, cement workers	... ..	76
29. Stone workers, etc.	... ..	1,252
30. Harness makers and whip makers	57
31. Makers of bangles	1,909
32. Toy, kite, cage, fishing tackles makers	19

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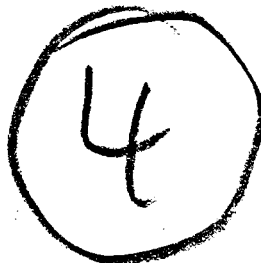
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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Etah District

By

MAULVI HAMID RAZA JAFFREY, B.A.



ALLAHABAD.

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CONTENTS.

	PAGES.
FOREWORD	i-v
CHAPTER I—	
1. General features	1
2. Population	<i>ib.</i>
3. Railways	<i>ib.</i>
4. Canals	2
5. Trade	<i>ib.</i>
6. Roads	3-4
7. Ferries	4
8. Markets	4-5
9. Fairs	5-6
CHAPTER II—	
1. Chemicals	7-9
2. Food grains	10
3. Glass	11-12
4. Hardware	12
5. Miscellaneous—	
(a) Baskets	<i>ib.</i>
(b) Bead purdahs (curtains)	12-13
(c) Gangajalis ²	13
(d) Jail industries	13-14
(e) Kanthies	14
6. Oils and ghi	14-15
7. Textiles—	
(A) Cotton—	
(i) Ginning and pressing	15-16
(ii) Weaving	16-17
(B) Fibres... ..	17
8. Wood-work	18

	PAGES.
CHAPTER III—	
Industrial possibilities of the district—	
(1) Munj... ..	19
(2) Brass ware	<i>ib.</i>
(3) Manufacture of brass ghungroos ...	19-20
CHAPTER IV—Statistics—	
1. Chemicals	21
2. Glass	21-22
3. Hardware—	
(i) Brass ghungroos	22
(ii) Cutlery	<i>ib.</i>
4. Miscellaneous—	
(i) Ban and rope	23
(ii) Baskets and gangajalis	<i>ib.</i>
(iii) Bead purdahs	<i>ib.</i>
(iv) Kanthies	24
5. Oil and ghi	<i>ib.</i>
6. Textiles—	
(i) Ginning and pressing	<i>ib.</i>
(ii) Handloom weaving	25
7. Wood-work	<i>ib.</i>
CHAPTER V—Directory—	
1. Ginning and pressing factories	26
2. Refineries at Jalesar	<i>ib.</i>
3. Miscellaneous	26-27
4. Bibliography	27

FOREWORD.

ETAH is principally an agricultural district, and with the exception of sugar manufacture, about which no statistics have been collected under Government orders, the only industries it possesses are handloom weaving and the manufacture of saltpetre, glass and glass bangles. Amongst the raw products of the district from which industries can be developed are cotton, *reh*, food grains, munj, tobacco, potato, *khas*, *sirkī* and *sink*.

Handloom weaving is the most important industry of the district and is extensively practised. The looms used are almost all throw shuttle, and the average production per loom is not more than 7 to 9 yards a day. A few factories recently opened in Kasganj are equipped with fly-shuttle looms and are also taking in apprentices for training. It is hoped that fly-shuttle looms will soon be popularised by them. One of these, advertised as a weaving school, charges admission and monthly tuition fees and proposes to teach weaving in a short course of six months. It should therefore be possible to organize there a weaving school, the expense of which could be met half by subscriptions of fees and half by Government. In the census of 1911 the district was reported to have over 5,000 male weavers, spinners and sizers. Spinning and sizing is usually carried on by females. It will not be unsafe to presume that the district has 4,000 looms amongst 5,000 male weavers, with an average output of 8 yards a day per loom or 32,500 maunds of yarn in a year. The district has more than 2,500 female spinners. If their average daily production be 5 chataks of yarn, they produce above 5,000 maunds of hand-spun yarn in a year. The import of yarn is said to be 6,200 maunds only. It is unfortunate that correct figures of import and export could not be obtained districtwise, but 6,200 maunds of yarn is quite inadequate for the requirements of the district.

It has about 1,000 ginners. At an average output of 6 seers a day the total amount of cotton ginned in four months would be 18,000 maunds.

The district had 58,000 acres under cotton in 1920-21. On an average production of 5 maunds to an acre, the district produces 290,000 maunds kapas which on ginning would yield 96,000 maunds of cotton. Of this only 18,000 maunds is hand-ginned, the remaining 78,000 is left for being ginned and pressed and exported through the various ginning and pressing factories in the district.

It would be an ideal thing for the district to have its own spinning mill, and Kasganj would be the best place for its location, but in the alternative a central co-operative store should be organized for the supply of cheap yarn. The store should be prepared to advance yarn on the security of cloth in slack season, as otherwise the dealer in yarn, being also the purchaser of cloth, will refuse to buy the cloth if weaver does not purchase his yarn. In Kasganj the yarn dealer is not necessarily the purchaser of cloth, and the field for a co-operative store is clearer there.

Saltpetre.—The district produces about 15,500 maunds crude saltpetre every year, which is about one-fourth of the total export of this material to Calcutta from the middle doab. The suggestion of the merchants about the fixation of prices under Government orders is quite impracticable. Crude saltpetre manufactured in the district is mostly exported to Farrukhabad for refining; only a portion is refined in the four refineries of the district. The refined saltpetre is also exported to Farrukhabad and from there to Calcutta. Enquiries also show that a portion of the refined saltpetre collected in Calcutta is utilised in the manufacture of manure and the rest is sent abroad. For the manufacture of manure saltpetre of the present purity is not required, and therefore it is said to be mixed with bone-meal and other ingredients in Calcutta. It would be more business-like to refine saltpetre of the present quality only for export abroad. The rest could be refined to a lesser degree for the manufacture of manure. The railway freight will also be reduced in exporting saltpetre of an inferior quality. It will be still more profitable to manufacture manure on spot and then export it. The tea gardens of Assam are said to be consuming large quantities of this manure,

Amongst the resources of the district the first place should be given to munj which covers about 25,000 acres of the Khadir area in parganas Soron, Faizpur, Ulai and Sahawar. On an average of 5.5 maunds per acre the total annual production of munj in the district comes to about 137,500 maunds. Not much use is made of this munj at present. A little is used for thatching, another portion in making ropes and strings, but a major portion is exported to Burma, Aligarh, Farrukhabad and Jaipur State, or goes to waste, being either left to rot or burnt on the spot. A better and more profitable use of this material would be the manufacture of mats. This question was taken up by the department and success is in sight. A munj mat factory in Kasganj will soon be an established fact as soon as an export trade is assured through the efforts of Mr. Nat Heard, Controller of the United Provinces Arts and Crafts Emporium of Lucknow. Munj sells at Rs. 2 to Rs. 4, average Rs. 3 per maund. Cost of manufacturing munj mats would be:—

	Rs.	a.	p.
Cost of one maund munj	3	0	0
Crushing at 7 seers per 10 annas	3	2	0
Twisting into string at $\frac{1}{4}$ seer per 6 annas	20	0	0
Weaving this in mats at 4 annas a square foot	40	0	0
Total	66	2	0

This would sell at 10 annas a square foot for Rs. 100.

Among the minor resources of the district are:—

(1) *Khas* for distillation. This grows largely in the Khadir of Aliganj tahsil.

(2) *Sirki* and *sink* for the manufacture of *moondhas*, baskets, *sirkipal*, etc.

(3) *Bead purdahs*.—A separate reference is necessary to be made to the bead purdahs of Soron. These are artistic, but with the exception of wheat stalks all materials used in their manufacture are foreign. Synthetic dyes are used, and the glass beads are Japanese. An attempt should be made to substitute these with indigenous articles. The substitution of shells (*koris*)

for beads was suggested as beads and pearls of glass are not manufactured in the country at present. The suggestion was much appreciated by the purdah makers. A short course of instruction in the Art School will benefit the bead makers very much.

(4) *Reh*.—Large tracts of usar land may be seen in the Jalesar tahsil, while the whole tarai of the Burbganga is infected with it. *Reh* is increasing in the Marehra pargana, but it is only used at present by dhobis or the glass makers to a very small extent. The manufacture of soda carbonate from *reh* has been found to be a practical proposition by Dr. Watson, Principal of the Technological Institute, who has written a note on the subject in the Bulletin of Industries and Labour of May, 1922.

(5) *Tobacco* grows in about 5,000 acres in the Etah district. At an average yield of 4 maunds an acre, the district is producing 20,000 maunds every year. It is exported in large quantities to Lucknow and other places in the provinces and the Punjab. It is used in the manufacture of smoking tobacco. Two varieties are grown at present—*purbi* or *katki* and the *desi*. Foreign varieties have been tried in Rungpur, and experiments made there show that it is possible to grow in India varieties suited for cigar manufacture. Experiments similar to those of Rungpur should be tried and better varieties grown in the district. Till then it will be more profitable to manufacture smoking tobacco in the district for purposes of export. Manufactured smoking tobacco is exported from Lucknow which is a big purchaser of raw tobacco from all over the province. The variety of tobacco grown in the district is looked upon as one of the best.

(6) *Potato*.—Etah has over 5,000 acres under potato, and is beaten by Farrukhabad, Hardoi and Shahjahanpur only in its cultivation of this crop. The yield is about 60 maunds per acre, and at that rate the district must be producing 300,000 maunds. Most of this is exported from Soron and Kasganj and other stations. Similarly the district produces and exports sweet potatoes in large quantities. No industrial use is made of these. If the starch factory at Farrukhabad could be

reorganized on a satisfactory basis, the opening of another at Kasganj is only a question of time.

Mr. S. T. Gadre, Industrial Chemist to Government, has taken the trouble of revising this report. He deserves special thanks of the department.

Thanks are also due to the following gentlemen who have rendered valuable help to the Superintendent in the collection of information :—

1. V. A. Stowell, Esq., I.C.S., O.B.E., Collector.
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6. M. Anis Ahmad, Tahsildar Etah.
7. Saiyid Mahdi Husain, Naib-Tahsildar, Kasganj.
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9. Babu Damodar Swarup Varma, Tahsildar, Kasganj.

CHAMPA RAM MISRA.

CHAPTER I.

INTRODUCTION.

1. — General features.

Etah lies in the central portion of the Ganges-Jumna doab. Its boundaries are:—

North.—The Ganges.

South.—Mainpuri and Agra districts.

East.—Farrukhabad district.

West.—Aligarh, Muttra and Agra districts.

Etah is an agricultural district, has few industries ancillary to agriculture. Its chief industries are the manufacture of—

(a) Glass,

(b) Crude saltpetre, and

(c) Weaving.

Ginning mills are worked with success at Kasganj and Jalesar. The chief agricultural products are wheat, bajra, barley, juar and cotton, and from amongst its non-agricultural products a profitable industry can be easily started from munj. Kasganj, Jalesar, Soron and Etah are the principal centres of trade.

2. — Population.

Etah has a population of 829,760.

3. — Railways.

The district is backward in communications. It is one of the few districts the headquarters of which have no railway connection. Two railway lines pass through the district:—

Railway stations.

- (1) Bombay, Baroda and Dariaoganj, Patiali on Ganges, Central India Railway. Gunj Dundwara, Garkha, Sahawar Town, Bhadhari Kailan, Kasganj, Kasganj Jn., Marehra.
- (2) East Indian Railway Main Jalesar road Line.

4.—Canals.

Canals and canal banks help communications to a certain extent.

Names of canals.	Length.	Area irrigated.
1. Etawah branch ...	12 miles	} 50,000 acres.
2. Farrukhabad branch ...	48 „	
3. Bewar branch ...	...
4. Lower Ganges Canal ...	34 miles	
5. Upper Ganges Canal ...	12 miles	

Numbers 4 and 5 are navigable during winter season.

5.—Trade.

The trade of the district in 1920-21 was :—

Imports ...	7,000 tons	=189,000 maunds approximately.
Exports ...	30,147 „	=814,000 „ „

Of this Kasganj exported 16,713 tons and imported 3,488 tons, i.e., nearly 50 per cent. of the trade of the whole district passed through Kasganj.

The following statement shows the rail-borne trade of Kasganj, but detailed figures for the remaining stations in the district are not available :—

Name of commodity.	Exports in tons.	Imports in tons.
Raw cotton	1,220	20
Cotton piece-goods (European and Indian) ...	...	50
Grain and Pulse—		
(1) Wheat	4,447	12
(2) Other grains	4,660	871
Metals	40	340
Oilseeds	5,930	79
Salt	10	1,568
Sugar and gur	406	548
Total Kasganj	16,713	3,488
Total of district excluding Kasganj	13,434	3,512
Total of the whole district	30,147	7,000

6.—List of roads.

	Length.	
	Miles.	Furlongs.
1. Aligarh, Etah and Cawnpore section ...	26	0
2. Muttra, Kasganj and Bareilly Trunk road ...	25	0
3. Railway approach road from Muttra, Kasganj and Bareilly Trunk road to Kasganj railway station on Rajputana—Malwa Railway ...	0	3
4. Railway approach road from Muttra, Kasganj and Bareilly Trunk road to Soron railway station on Rajputana—Malwa Railway ...	0	2
5. Aliganj to Majhola road ...	9	0
6. Etah to Kasganj ...	15	0
7. Etah to Marehra ...	1	0
8. Etah to Shikohabad ...	12	0
9. Etah via Awah to Jalesar road ...	26	0
10. Gunj Dundwara railway station road ...	0	4
11. Jalesar to Muttra road ...	7	0
12. Marachi to Marehra road ...	4	0
13. Pahara, Rampur and Radhani road ...	4	0
14. Patiali Railway approach road ...	0	7
15. Aspur to Saki road ...	3	0
16. Patiali road ...	0	1
17. Aliganj road ...	0	4
18. Gunj Dundwara road ...	0	5
19. Sakit road ...	0	3
20. Aliganj (Patiali) and Kasganj road ...	9	0
21. Etah, Aliganj and Farrukhabad road ...	37	0
22. Aliganj circle road ...	4	0
23. Etah and Marehra road ...	10	0
24. Marehra to Nidholi road ...	5	0
25. Etah, Nidholi and Jalesar road ...	15	0
26. Soron, Patiali, Gunj Dundwara and Aliganj road ...	30	0

	Length.	
	Miles.	Furlongs.
27. Etah and Sakit road ...	10	0
28. Kasganj, Mainpuri and Sahawar road ...	17	0
29. Etah and Patiali road ...	20	0
30. Etah, Awah and Tundla road ...	10	0
31. Etah, Amanpur and Sahawar road ...	19	0

Besides these there are 296 miles under 3rd, 4th and 5th class roads.

7.- List of Ferries.

River Kali Nadi.

Lalpur, Jahangirabad,
 Partabpur, Katara,
 Sahara, Inchpur,
 Oan, Garhi,
 Kabirpur, Mirzapur,
 Jalalpur, Narauli,
 Sonsa, Dhumri,
 Nagaria, Jhingan,
 Ujaipur, Oan,
 Hamirpur, Dhundra,
 Gangasara, Narauli,
 Gadhai, Mirghat,
 Mohara, Narai,
 Madadpur, Datawali.

8.—List of Markets.

	Market days.
Milauli ...	Tuesday and Saturday.
Baroli ...	Sunday and Wednesday.
Neorai ...	Sunday and Thursday.
Etah (Bhagipur) ...	Monday and Friday.
Sakit ...	Tuesday and Saturday.
Rajaur ...	Monday and Friday.
Marehra ...	Ditto.
Mirichi ...	Sunday and Wednesday.
Pewari ...	Tuesday and Saturday.
Pilwa ...	Sunday and Wednesday.

		Market days.
Mohanli Kalan	...	Tuesday and Saturday.
Muazzanpoor	...	Sunday and Wednesday.
*Manpur Nagaria	...	Monday and Thursday.
*Salempur Bibi	...	Monday and Friday.
Yaklehar	...	Sunday.
Kadarhair	...	Wednesday.
Badariya	...	Monday and Friday.
Mahmudpur	...	Sunday.
Mohanpur	...	Sunday and Wednesday.
Amanpur	...	Tuesday and Saturday.
Sahawar	...	Ditto.
Kasganj	...	Ditto.
Sarai Aghat	...	Sunday and Wednesday.
Aliganj	...	Saturday, Monday and Thursday.
*Mohanpura	...	Sunday and Thursday.
*Kasganj	...	Saturday and Tuesday.
*Sarai Patti (new)	...	...
Alipur	...	Tuesday and Friday.
Rampur	...	Sunday and Wednesday.
Thana Dariaoganj	...	Tuesday and Saturday.
Dhumri	...	Sunday and Wednesday.
Rupdhian	...	Monday and Wednesday.
Dundwaraganj	...	Monday and Thursday.
Hardoli	...	Sunday and Wednesday.
Kadirganj	...	Tuesday and Saturday.
Badhola	...	Ditto.
Nawabganj	...	Ditto.
Awa	...	Monday and Saturday.
Pilkhatra	...	Sunday.

9.—List of important Fairs.

Saraogi	...	...	<i>Kuar badi</i> 1st.
Ram Lila	...	...	<i>Kuar badi</i> 11th till <i>Kuar sudi</i> 12th.

*Cattle markets in tahsil Kasganj.

Tazia	...	...	Muharram.
Mahadeo	..	...	<i>Phagun badi</i> 13th and <i>Bhadon sudi</i> 6th.
Phul Dol	...	...	<i>Chait sudi</i> 4th.
Lattayat	...	...	Last date of <i>Chait</i> .
Debi-ki-zat	...	...	Every Monday in <i>sudi</i> , 16th of <i>Kuar</i> up to 24th in <i>Kuar</i> , 16th of <i>Chait</i> up to 24th <i>Chait</i> , last date of every month (<i>Puran-</i> <i>mashi</i>).
Bathing in the Ganges	...	...	Every <i>Somwati Amawas</i> and every Lunar or Solar eclipse.
Marag Sri	...	...	<i>Aghan sudi</i> 26th—30th.
Sanjhi	...	...	<i>Bhadon sudi Puranmashi</i> , till <i>Kuar sudi</i> 2nd.
Debiji	...	...	<i>Kartik badi Amawas</i> and <i>Phagun sudi Puranmashi</i> .
Sidhahas Jithra	...	...	<i>Baisakh sudi Naumi</i> .
Debi Sewar	...	...	<i>Chait sudi Puranmashi</i> .
Khan Zamanpur	...	...	<i>Pus sudi</i> 2nd.
Urs Reta Shah	...	...	15th to 20th <i>Zikad</i> .
Mela Gangaji	...	...	<i>Kartik sudi Puranmashi</i> and <i>Jeth sudi</i> 10th and <i>Kartik sudi Puranmashi</i> and 12th to <i>Aghan badi</i> <i>Jeth</i> .
Dasehra	...	...	<i>Kuar sudi</i> 10th.
Holi festival	...	...	<i>Chet sudi</i> 2nd.
Urs Saiyid	...	...	21st to 25th <i>Shaham</i> .
Ibrahim	...	...	Ditto.

CHAPTER II.

Description of, and suggestions for, the improvement of the various district industries.

1.—Chemicals.

(i) *Saltpetre.*

Crude saltpetre is manufactured in several places in Etah district and more commonly in Etah and Jalesar tahsils. The chief centres of manufacture are: Nadrai, Koramai, Naineni, Badbari Kalan, Baragadri, Manpur, Nagasi, Marehra, Merachu, Ahmadnagar, Bamnai, Bhurgawan, Nidhauri Khurd and Rijour. Work proceeds from December to May. Manufacturers usually of the Chamar class collect nitrous earth (*loni*) on payment of royalty to the zamindars.

Process.—Small circular pits are dug into the ground and covered with small sticks and *poola* (straw). The nitrous earth (*loni*) is heaped on this straw and water is poured over it. The filtrate is led into earthen tubs (*nads*) by means of *kabhcha* drains (*nalis*). It is then boiled for about six hours. Water evaporates and crude saltpetre is left behind. Merchants from Farrukhabad usually come to the manufacturers to buy saltpetre. Very occasionally has the manufacturer to take his saltpetre to Farrukhabad for sale. Average price is Rs. 4 a maund. A manufacturer earns 8 annas a day. The subjoined table clearly shows the extent and the present condition of the industry:—

Year.	Number of works.	Number of persons employed in it.	Quantity produced.	Quantity exported.	Place where exported.	Means of transportation.
			Mds.	Mds.		
1921	281	1,660	15,767	15,544	Farrukhabad	Railway and bullock carts.

(ii) Refining of crude saltpetre.

Saltpetre was much in demand during the period of war for the manufacture of ammunition. Many works were started at that time. Marehra in Etah tahsil alone had 100 works.

Hardly 50 per cent. exist now that prices are not so high, while the cost of production has gone up. The percentage of *karhais* is only 28.

An estimate is made of the pure saltpetre contained in the crude mixture, and payment is made at the rate of 5 annas per seer of the pure saltpetre contained in it. The crude saltpetre is mixed with water and heated over a gentle fire produced by means of cheap fuel like jhan. When solution becomes clear, it is transferred to vats where crystallization is induced by bamboo pieces or straw dipped in the solution. In seven or eight days long crystals of slightly yellowish colour separate. These are removed and the solution is again put into vats for a similar period when saltpetre of an inferior quality is obtained, or the solution is allowed to stand in vats for 12 days in the first instance when only one quality is obtained and the solution is transferred to the boiling pans and boiled with a fresh mixture of crude saltpetre. When saltpetre and the solution have been removed, the residue in the *karhais* (boiling pans) is dealt with separately for common salt.

About 5 maunds of saltpetre and two maunds of salt are obtained on refining 10 maunds of crude saltpetre. The licence fee for a refinery is Rs. 50 a year. A tax of Rs. 2-8-0 per maund is levied on salt. Refined saltpetre is exported to Calcutta. The market fluctuates very much and is always uncertain. Refiners suggest control prices by Government which is impracticable. The average price of refined saltpetre may be taken to be Rs. 11 a maund. The daily expenses of a refinery would be Rs. 225, while its product would sell for Rs. 275. Labour is paid by time.

ETAH DISTRICT.

9

The following statement shows the present condition of the industry of crude saltpetre refining :—

Number of refineries.	Number of <i>karhais</i> .	Number of labourers employed.	Daily out-turn of saltpetre.	Daily outturn of salt.	Remarks.
4	5	50	Mds. 25	Mds. 12	This salt is a subsidiary product. About 50 maunds of unrefined saltpetre is consumed daily. During war time there were eight refineries with 18 <i>karhais</i> .

2. — Food grains.

The resources of the district may be gauged by the following table showing the acreage and the outturn of the various agricultural crops in the district :—

Year.	Crops.											
	Wheat.			Bajra.			Barley.			Juar.		
	Area.	Yield.	Price.	Area.	Yield.	Price.	Area.	Yield.	Price.	Area.	Yield.	Price.
	Acres.	Mds.	Rs.	Acres.	Mds.	Rs. a. p.	Acres.	Mds.	Rs. a. p.	Acres.	Mds.	Rs. a. p.
1921 ..	139,090	1,284,092	97,45,680	112,752	563,866	31,81,319 2 3	53,177	627,018	30,14,909 8 2	47,966	251,922	13,41,433 14 3
1922 ..												
1923 ..												
1924 ..												
1925 ..												
1926 ..												
1927 ..												
1928 ..												
1929 ..												
1930 ..												

Year.	Crops - (concluded).											
	Cotton.			Potato.			Munj.			Tobacco.		
	Area.	Yield.	Price.	Area.	Yield per acre.	Price per maund.	Area.	Yield per acre.	Price per maund.	Area.	Yield per acre.	Price per maund.
	Acres.	Mds.	Rs.	Acres.	Mds.	Rs. a. p.	Acres.	Mds.	Rs.	Acres.	Mds.	Rs.
1921 ..	46,115	235,941	23,11,877	5,194	100	1 8 0	25,000	5½	2	725	7	19
1922 ..												
1923 ..												
1924 ..												
1925 ..												
1926 ..												
1927 ..												
1928 ..												
1929 ..												
1930 ..												

3.—Glass.

(1) *Block Glass*.—Block glass is made at Jalesar in the Lakshmi Glass Works owned by L. Govind Ram. It has one furnace and gives employment to 30 workmen. Labour is paid by time.

The following table shows the raw materials, places of their origin and amounts of annual import :—

Material.	Place origin.	Amount of import.
		Mds.
Silica (sand) ...	Lohsi, Bargarh and	
Sodium carbonate (oda ash).	Shankergarh. Calcutta ...	16,000 7,000
Calcium carbonate (lime) ...	Katni in C. P. ...	1,000

Fire clay for making pots is obtained from Jubbulpore. Two men can prepare 4 pots in a month. Coal comes from Jharia (Bengal). The price of coal has risen from Rs. 2 per ton in 1913-14 to Rs. 15 per ton; and the railway freight has gone up from Rs. 7 a ton to Rs. 11 a ton. The annual output of the factory is about 10,000 maunds worth Rs. 50,000. The factory works throughout the year.

The process of manufacture will be found described in Dobb's monograph on "Pottery and Glass." Block glass is exported to Saharanpur, Aligarh, Bulandshahar, Moradabad, Bareilly, Meerut and Champaran. Only a small portion is consumed in the district.

(ii) *Making of kachcha Gangajalis*.—Qadirbari near Soron in Kasgunj tahsil has three families of manihars who make ordinary kachcha phials, Gangajalis and acharis (flasks for keeping preserves and jams). Block glass is brought from Rati-ka-Nagla or Akrabad. Gangajali has a capacity to hold about 2½ seers of water and sell at the rate of 150 for Rs. 5. The manihar's wages come to Re. 1-8-0 to Rs. 2 a day.

(iii) *Bangle-making*.—Bangles are made in Marehra, Kasgunj and Mohanpur. About 325 are engaged in the industry

and work on six dozen furnaces. Very fine churis (bangles) are manufactured, 20,000 weighing one maund.

A few heavy and coarse bangles are made at Jalesar. There is no demand for these in the district. They are all exported to Aden where they are much appreciated.

4.—Hardware.

Cutlery.—Razors, scissors and sarautas are made at Kasgunj, Bilram and Tyebpur in Kasgunj tahsil by about 12 families, and at Aliganj and Rampur by two families. Seven families of Meao in Aliganj tahsil manufacture knives, spears and hatchets also. Locks are also made in small quantities. Old railway iron is bought at 2½ seers for a rupee. Two workmen can prepare 6 sarautas in one day.

Prices are:—

	At places other than Meao.		At Meao.	
	Rs. a.	Rs. a.	Rs. a.	Rs. a.
Sarautas	... 0 6 to	0 7 each	0 8 to	0 12 each.
Razors	... 0 3	„ 0 4 „		
Scissors.	... 0 6	each	0 8 „	1 4 „
Spears	...	...	1 0 „	3 0 „
Locks	...	...	0 6 „	2 0 „
Gupti	...	...	8 0 „	10 0 „

A few articles are exported to Budaun and Bareilly districts, otherwise the manufactures are consumed locally.

5.—Miscellaneous.

(a) *Baskets.*—Baskets are made at Soron from jhau, arhar, bamboo or khajoor wood. Two baskets joined by a bamboo pole used for carrying Ganges water is called a kanwar. Baskets cost 4 annas each and kanwar 8 annas to 10 annas. Sometimes prices rise very high and recently a kanwar was sold for Rs. 3. Pilgrims buy them to carry glass phials of Gangajali.

(b) *Bead purdahs (curtains).*—Bead purdahs are made at Soron for the last 40 years. Two families still make them. Kallu and Kanni.

Women and children also work along with men. Beads are made of wheat stalks dyed in various colours. A seer of them can be had for Re. 1. Small glass beads of various colours are imported from Delhi at Re. 1 per guchehi. Bigger glass beads (called pearls) are purchased at 12 annas per peti of 600. Their pre-war price was 3 annas.

A purdah of average quality costs Rs. 30 to Rs. 35. A man can make it in a fortnight. Purdahs costing Rs. 400 to Rs. 500 are made for export. One such was recently made for presentation by a Rais to H. R. H. the Prince of Wales.

This is an artistic work. Our provincial School of Arts and Crafts, can do much in the direction of improving and fostering this local craft.

(c) *Gangajalis* of tin and galvanised iron are also made at Soron by six or seven persons. Old kerosine oil tins or galvanised sheets are used. Big size *Gangajalis*, made at the rate of four out of one tin, cost 5 annas to 6 annas each, while small ones 8 to a tin, cost 3 annas each. Few *Gangajalis* of galvanised sheets are made, as they are costly. Such a one, of the size of the tin *Gangajali*, will cost Re. 1-4-0.

(d) *Jail Industries*. Etah district jail has 300 prisoners and two factories. Work goes on for nine hours a day, i.e. 6 to 11 a. m., and 1 to 5 p. m. One is fitted with handlooms for weaving carpets, durries, dosooti, jharan, garha, niwar and bedsheets. Yarn of 10s is purchased from Cawnpore mills at Rs. 8 a bundle of 10 lbs. (or five seers). Carpets are made in size 7' x 7'. Three persons—a reader and two actual weavers, weave 5" in a day.

White and blue carpets cost Rs. 20 each; while coloured and flowered ones cost Rs. 30 each.

Durries are made in bed lengths 7' x 4' unless specially ordered in other sizes. Two persons working nine hours weave 2½ feet in a day.

Dusuti is made for prisoners' clothing in pieces of 40 yards by 28 inches.

Squares, jharans and towels are woven 2' x 2' and 3' x 3' respectively.

Garha.—A than is 20 yards \times 28". One prisoner weaves 12 feet in one day.

Ban.—Is made in the other factory out of munj. Small mats are also woven. One prisoner can crush 15 seers of munj in a day or twist 300 yards of ban, weighing about $\frac{1}{2}$ seer. This ban is sold at Rs. 6 a maund, or 6 annas per $2\frac{1}{2}$ seers, 6' \times 2' mats are made for prisoners to sleep on out of three seers of munj. Bigger mats are made to order and are sold at 10 annas a square yard.

The jail also crushes sarson for its own use. Two ghanis of $7\frac{1}{2}$ seers each are crushed in one day. Sarson yields one-third oil and two-thirds cake. The jail further undertakes the caning of chairs at the rate of 12 annas per seat.

(e) *Kanthies.*—Large quantities of kanthies are imported from Muttra by about 50 shopkeepers of Soron. They are all re-exported by pilgrims visiting Soron.

They are made of the following woods at places noted against each:—

Wood.	Place of origin.
Alsi	Jaipur.
Bhagwati	Bankura district (Bengal).
Bet, arhar	Muttra, Datia and Jhansi.
Sandal	Rewari.
Rudraksh	Benares.

Lac kanthies are imported from Cawnpore. Alsi kanthies are the cheapest and can be had at the rate of 20 for one piec. Rudraksh ones are the dearest.

6.—Oils and ghi.

(a) *Oils.*—The principal seeds from which oils is crushed in the district are sarson, duan and nim. Oil is also pressed from mustard and castor seeds in very small amounts for local

consumption only. The following table gives a rough idea of the oils produced :—

Year.	Quantity in maunds.	Remarks.
1921 ...	15,733	

Oils are all locally consumed.

(b) *Ghi*.—*Ghi* is exported from the district. The production, local consumption and export figures are given in the following table :—

Quantity produced in maunds.	Quantity of export.	Places where exported.
9,742 ...	2,293 ...	Agra, Hathras, Mainpuri, Farrukhabad, Muttra, Punjab, Calcutta, Haldwani, Cawnpore and Kaimgunj.

It is exported by means of railways, and pack animals.

7.—Textiles.

(A) Cotton.

(i) *Ginning and pressing*.—Etah grows a little *Narma* cotton which has a tinge of natural colour in it. This is supposed to be superior to the ordinary cotton and is appreciated for its natural fast colour. It sells cheaper than ordinary cotton. Most of this is ginned by hand for local consumption. Ordinary cotton is grown in the district in abundance.

Cotton is brought to the factories from villages of Etah and Aligarh districts. It is ginned and pressed and exported through *byoparis* to Hathras, Agra and Bombay. Etah has 5

ginning factories. A list is given in Chapter V, "Directory." Four out of the five factories do not buy kapas nor do they export cotton on their account; they simply work on commission and charge 14 annas a maund for ginning and Rs. 6-8-0 per bale of $4\frac{1}{2}$ maunds for pressing. Only Rama-ginning factory buys its own cotton and gins it. It is pressed in the West Patent Company's press at Gunjundwara and exported—cotton to Bombay and binaula to the Punjab, Rewari and Hissar. When free from its own work, it gins kapas of other people on the same rates as are charged by other factories.

The West Patent Company's factories at Kasgunj and Gunjundwara press bhusa for Government work in off season and charge Re. 1-13-0 per bale or Rs. 4-3-0 a bale including cost of gunny bags and hoops. The one at Gunjundwara also presses cotton ginned at other factories. Its rates for this work are:—

	Rs.	a.	p.	
For Gunjundwara cotton	...	7	0	0 a bale.
For Kaimgunj cotton	...	5	8	0 "
For Rama ginning factory's cotton	6	11	0	"

(ii) *Weaving*.—Handloom weaving is the chief industry of Etah district. Colonies of weavers may be seen all over the district but the chief centres are:—

- (a) Marehra.
- (b) Gunjundwara.
- (c) Kasgunj.

Gazi, garha, pattu (plain or coloured), lehngawar, dhotis, doria, dosuti and charkhana (checks) are the fabric ordinarily woven on-throw shuttle looms. A garha piece is 20 yards \times 36"; doria, dosuti and checks are 12 yards \times 24" and lehngawars 8 or 12 yards \times 29".

Mill made yarn is imported from Agra, Bombay, Amritsar, Bharoach and Ahmedabad. A little handspun yarn is also used and is purchased locally at 10 to 12 chhataks for a rupee.

The prices of cloth range between 4 annas and Re. 1 a yard. A weaver can earn 8 annas to 12 annas a day and weaves a than of 12 yards. He is assisted in the preliminary processes by his

wife and children. Wheat flour is used for sizing. Generally the weaver buys his own yarn and sells his goods in the open market, where weavers collect in the evening to make their transactions. The cloth is exported through *byoparis* who come from outside to buy it. Some dealers also advance yarn on the condition that cloth woven from it will be sold only to them.

The following statement shows the imports of yarn, etc.

Number of weavers.	Quantity of yarn imported.	Remarks.
4,712	6,118 mds.	Cloth is exported to Agra, Hathras, Farrukhabad, Cawnpore, Delhi, Shahjahanpur and Badaun, by means of railways, ekkas and bullock carts.

(B) *Fibres.*

Munj.—Munj grows abundantly in the Ganges Khadirs of Kasgunj and Aligunj tahsils in the district. Thousands of maunds of munj is produced every year and sells at Rs. 2 a maund. It is crushed at the rate of 10 annas for every 7 seers. A man crushes 7 seers in a day. Ban (string) is twisted out of the munj; 2½ seers ban is manufactured out of 3½ seers of munj. A man can twist ¾ seers munj in a day. He will get 6 annas for it. Best ban sells at Re. 1-8-0 to Re. 1-10-0 per 2½ seers. Thick ban costs 10 anna per 1½ seers. Ban is exported to Qaimganj and other places in Farrukhabad and Badaun districts.

Ropes.—Thin and thick are also made out of the string, and sold locally to shop-keepers or by hawking in the bazars. Thin ropes cost 9 pies each and thicker ones from Re. 0-1-6 to 2 annas each. Bhistis, Chamars and Habooras generally make strings and ropes for sale. Work stops during rains. Cultivators make ropes for their own use themselves. Women usually twist ban.

8.—Wood-work.

Ordinarily a carpenter is to be seen in every village making articles of domestic and agricultural use. Some good articles are only made at Marehra in Etah tahsil. Office boxes, ladies toilet cases (singardan) and qalamdars are the common articles made. Marehra has Shisham wood in abundance. The industry had developed under the patronage of the local zamindars, but it is declining now. Epidemics of plague and influenza have reduced the number of artizans and high prices have reduced the demand for such articles. Many carpenters have migrated to other places and only a few are left. Even the best mistri is thinking of leaving Marehra for want of work. He thinks that a capital of Rs. 500 will enable him to establish a good industry. A skilled workman earns Re. 1-4-0 to Rs. 2 a day against 10 annas of an ordinary barhai.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

(1) *Munj*.—The whole tract north of Burhganga from Sahawar to Qadirgunj and north of Patiali is full of munj which grows spontaneously in the Khadir. It is roughly estimated that about 25,000 acres of land is under munj, which is at present exported to Cawnpore, Hathras and Farrukhabad by rail or bullock carts. Ban and ropes are also made out of it but in jails it is woven into mats. If a temporary school for teaching mat-weaving were started here, a very paying industry can easily be established. Paper pulp can also be made of munj.

(2) *Brass ware*.—Brass utensils are made in Jalesar where 11 furnaces give employment to 70 persons. Lotas and thalis are usually made. Old brass utensils are bought at the rate of Re. 1-4-0 a seer and the finished products sold at the rate of Rs. 2-8-0 a seer. Soron alone imports brass utensils, mostly lotas, worth about Rs. 50,000 from Benares every year. These are re-exported by pilgrims. Almost every pilgrim takes a lota. Soron, together with the amount required for local consumption, which is in no way negligible, can feed a brass factory.

(3) *Manufacture of brass ghungroos*.—Brass ghungroos are made in Jalesar in about 100 furnaces each worked by three men. Old brass utensils are imported from Mirzapur, Rewari and Hathras. About 3,500 maunds old brass worth Rs. 1,75,000 was imported in 1920-21. Iron balls used in the ghungroos are imported from Nagina to the extent of 100 maunds. Ghungroos of various sizes and weights ranging from 1/2 chhatak to 1 seer each are made. About 4,050 maunds Ghungroos of the value of Rs. 1,62,000 are exported annually by rail to the Punjab and the eastern districts of the United Provinces.

Etah is a sugarcane growing district and requires kolhus for pressing sugarcane in large numbers. To meet both the above wants, a factory may be started in Kasganj or Soron. Both are railway stations, and easily accessible.

CHAPTER IV.

STATISTICS.

1.—Chemicals.

(i) *Crude Saltpetre.*

District.—Etah.

Industry.—Manufacture of unrefined saltpetre.

Raw material used.—Loni.

Exports.—15,544 maunds.

Place of consignment.—Farrukhabad.

Manufacture.—Cottage industry.

Number of hands employed.—1,660.

Wages.—8 annas a day.

Outturn.—1 maund per karhai per day ;

1 maund=11 punseries.

(ii) *Refined Saltpetre.*

District.—Etah.

Industry.—Refining of saltpetre.

Raw material used.—Crude saltpetre.

Exports.—About 5,000 maunds of refined saltpetre.

Place of consignment.—Calcutta.

Number of hands employed.—50.

Wages.—Rupees 12 a month.

Outturn.—25 maunds saltpetre a day with 12 maunds salt.

2.—Glass.

District.—Etah.

Industry.—Glass.

Raw materials used.—Silica from Bengal, Sodium Carbonate from Calcutta, Lime from Katni.

Exports.—8,000 maunds worth Rs. 40,000.

Wages.—Rupees 12 a month.

Number of hands employed.—30.

Outturn.—10,000 maunds a year.

(i) *Bangles.*

District.—Etah.

Industry.—Bangle making.

Raw material.—Crude glass.

Exports.—About 4,00,000 churies.

Manufacture.—Cottage basis.

Wages.—12 annas to Re. 1 a day.

Number of hands employed.—325.

Outturn.—1,000 churis a day.

3.—Hardware.

(i) *Brass Ghungroos.*

District —Etah.

Industry.—Brass ghungroo.

Raw material.—Brass.

Exports.—4,050 maunds.

Manufacture.—Cottage basis.

Wages.—8 annas a day.

Number of hands.—300.

Outturn.—Worth Re. 1-4-0 a day.

(ii) *Cutlery.*

District.—Etah.

Industry.—Manufacture of cutlery.

Raw materials.—Brass and wood and iron.

Exports.—Very irregular and small in quantity. Cannot be determined, to Bareilly and Budaun.

Manufacture.—Cottage industry.

Wages.—14 annas a day.

Number of hands employed.—About 100.

Outturn.—Worth Re. 1-8-0 per day.

4.—Miscellaneous.

(i) *Ban and rope.*

District.—Etab.

Industry.—Manufacture of ban and rope.

Raw materials.—Moonj.

Places of consignment.—Qaimguuj, Farrukhabad and Budaun.

Wages.—Six annas per day.

Number of hands employed.—636.

Outturn — $\frac{1}{2}$ seers moonj twisted in a day.

(ii) *Baskets and Gangajalis.*

District.—Etab.

Industry.—Manufacture of baskets and Gangajalis.

Raw materials.—Basket, jhao, arhar, bans, and khajoor ;
Gangajali :—Tin, galvanized iron sheets,
and kachcha glass.

Manufacture.—Cottage basis.

Wages.—Basket :—6 annas to 8 annas a day.

Gangajali :—10 annas a day.

Outturn.—One man can make about seven Gangajalis (of small size) in a day.

(iii) *Bead purdahs.*

District.—Etab.

Industry.—Purdah making.

Raw material.—Shisham wood locally obtained, coloured wheat stalks—local pith very thin coloured glass beads and big imitation pearls of glass.

Manufacture.—Cottage industry.

Wages.—Rupee one per man per day.

Number of hands employed.—Only two families comprising about half a dozen persons.

Outturn.—One ordinary purdah is finished in about a fortnight by one man.

(iv) Kanthies.

District.—Etah.

Industry.—Kanthi making.

Raw materials.—Alsi from Jaipur, Bhagwati from Bankura district (Bengal), arhar (Muttra, Datia and Jhansi), *sandal* from Riwari, rudraksh from Benares.

Imports.—About 25,000 Kanthis from Muttra.

Exports.—Not regularly exported]but only taken by jattris coming from distant places.

Manufacture.—They are not made here; all are imported and sold by shop-keepers.

Number of hands employed.—About 50.

Outturn.—One shop may sell worth Rs. 3 a day in season.

5.—Oil and ghi.

District.—Etah.

Raw material.—For oil: Sarson, duan, nim, castor and mustard.

Imports.—Ghee: 4,083 maunds.

Exports.—Ghee 2,293 maunds to Punjab, Calcutta, Haldwani, Hathras, Agra, Mainpuri, Cawnpore, Muttra, Farrukhabad.

Manufacture.—Cottage industry.

Wages.—A teli earns 12 annas a day.

Outturn.—One man gets about three ghanis by crushing about 15 seers of oil in a day.

6.—Textiles.

(i) Ginning and pressing.

District.—Etah.

Industry.—Cotton, ginning and pressing.

Raw material used.—Kapas.

Exports.—8,961,130 lbs. of cotton.

Place of consignment.—Hathras, Agra and Bombay.

Number of hands employed.—668.

Wages average.—Rupees 40 per mensem.

Outturn.—9,028,000 lbs.

(ii) *Handloom weaving.*

District.—Etah.

Industry.—Handloom weaving.

Raw materials.—Yarn.

Exports.—Rs. 5,40,125 worth.

Place of consignment.—Agra, Hathras, Farrukhabad, Delhi, Shahjahanpur and Budaun.

Wages.—Between 8 and 12 annas a day.

Number of hands employed.—4,712.

Outturn.—6 yards a day per head.

7.—Wood-work.

District.—Etah.

Industry.—Wood work.

Raw materials.—Wood : shisham and babul etc.

Manufacture.—Cottage basis.

Wages.—Re. 1 a day.

Outturn.—Worth Rs. 2 a day.

CHAPTER V.

DIRECTORY.

1. *List of ginning and pressing factories.*

- (1) Balwant Singh Ginning and Pressing Factory, Jalesar, (Etah).
- (2) The West Patent and Company, Kasganj (Etah).
- (3) Nathu Ram's Factory, Kasganj (Etah) (owned by Nathu Ram Behari Lal).
- (4) The West Patent Company's Ginning and Pressing Factory, Gunjdundwara, tahsil Aliganj, (Etah).
- (5) Rama Ginning Factory, Gunjdundwara, tahsil Aliganj, (Etah) (owned by Messrs. Dhunni Lal and Mohan Lal of Kaimganj in Farrukhabad district).

2. *List of refineries at Jalesar.*

- (1) Debi Das.
- (2) Lachhmi Narain.
- (3) Hazari Lal.
- (4) Shiam Lal.

The first is the most important.

3. *Miscellaneous firms.*

- (1) Lala Janki Prasad Brij Lal, grain, cotton and ghi merchants, Kasganj.
- (2) Lala Babu Ram Bansi Dhar, grain, cotton and salt merchants, Kasganj.
- (3) Lala Govind Ram Tansukh Rai, grain, cotton and salt merchants, Kasganj.
- (4) Lala Behari Lal Sambharmall, grain, salt, sugar and flour merchants, Kasganj.
- (5) Lala Beni Ram Fakir Chand, sugar and grain merchants, Kasganj.
- (6) Lala Fakir Chand Mathura Das, sugar, grain and cotton merchants, Kasganj.

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- (7) Lala Jai Jai Ram Sri Ram, grain and cotton merchants, Kasganj.
 - (8) Lala Jhunni Lal Jagannath, sugar, grain and cotton merchants, Kasganj.
 - (9) Lala Shiva Charan Lal Banke Lal, sugar, grain and cotton merchants, Kasganj.
 - (10) Lala Shankar Lal Jamna Das, sugar, grain and cotton merchants, Kasganj.
 - (11) Lala Tika Ram Makundi Lal, sugar, grain and cotton merchants, Kasganj.
 - (12) Basant Lal Dwarka Das, sugar, grain and cotton merchants, Kasganj.
 - (13) Rai Bahadur Chotey Lal Durga Prasad, sugar, grain and cotton merchants, Kasganj.
 - (14) Sobha Ram, cloth merchant, Etah.
 - (15) Babu Ram, general merchant, Etah.
 - (16) Piare Lal, cotton merchant, Etah.
 - (17) Panna Lal, grain merchant, Etah.
 - (18) Kanna, ghi merchant, Etah.

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Report of the
INDUSTRIAL SURVEY
of the United Provinces

Farrukhabad District

By
JAGDISH SAHAI WATAL, B.A.

5



ALLAHABAD:
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FOREWORD.

Two aims were set before the Survey staff:—

- (a) To bring up to date the material that exists in the extant monographs. No attempt has, therefore, been made to repeat anything that is available in the monographs and still holds good.
- (b) To bring out a provincial compilation on the lines of Mr. Couchman's Handbook of Commercial Information in Madras. This was asked by the Government in G. O. No. 24/I, dated the 26th July, 1921. An attempt has been made in the report to combine the two aims. Export and import figures were unfortunately not obtainable districtwise, and for the purpose of compiling them a special staff would have been needed in the offices of the various railway systems running through the province. The Survey had, therefore, to be content with the figures contained in Municipal and other Government records or the estimates given by the people in the line.

2. The report is divided into five chapters. The first is a small introduction showing the general features of the district, its rivers, canals, railways, population, ferries, roads, markets and fairs; the second attempts to describe the present condition of the industries, the organization of labour and the wages and the current marketing system; the third gives the statistics which will form the ground work for the compilation of the provincial handbook.

Chapter IV is a directory of banks, industrial schools and manufacturers of, and dealers in, various commodities, while the last contains a note on printing by Mr. H. B. Shroff.

3. The information available in the Government, Municipal and District Board records has been verified on the spot by local enquiries in as many ways as possible. But it must be remembered that enquiries have been made from people in the trade who were naturally not very willing to give it.

Various causes made the task of the enquirer difficult—the non-co-operation movement weighed with a few, many others were afraid of the Income-tax Officer making use of the information for purposes of assessment, while the ignorant masses had a vague suspicion that the enquiry was being conducted to make information available to foreigners desirous of killing the cottage industries by organizing similar ones on a mass production basis.

4. The Superintendent has made the following suggestions :—

(A)—PERFUMES.

The chief difficulties in the way of expansion of this industry are said to be :—

- (1) Restrictions in the supply of coal.
- (2) Insufficient supply of flowers of good quality.
- (3) Insufficient supply, and rise in the price of sandalwood.
- (4) Defective stills.
- (5) Want of standardization of quality.
- (6) Bad system of marketing.
- (7) Unattractive phials.

(1) Coal situation is easy now and this difficulty will be removed of itself.

(2) There is no doubt that the otto content of the variety of rose at present grown in the province is only .015 per cent. against .033 per cent. of the Bulgarian rose. Attempt should, therefore, be made to increase the otto content of flowers by selection and improved cultivation. Experiments should also be undertaken to increase the yield per acre of the flower. Irrigation difficulty stands in the way of expansion in cultivation in Kanauj. There is no canal, but perhaps tube wells may be able to supply sufficient water, as the soil round about Kanauj is sandy. The problem has to be faced by the Agricultural department. Experiments should also be tried in Government and Court of Wards estates to grow an improved type of rose. The publication of the results of experiments made in rose distillation by the Industrial Chemist in vernaculars will prove of immense value to the Kanauj perfumers.

(3) Mysore Government is a serious competitor in the field, and with the prospect of getting a monopoly of the oil

throughout India has not only refused to sell its wood to other provinces but has commenced bidding for the Madras sandalwood also. Kanauj distillers would like to see a portion of the Madras wood reserved for them. A bonded warehouse may prove cumbersome. It may also pay the Madras Government to sell the wood in smaller lots as the number of competitive purchasers will increase.

(4) The present stills have only the advantage of being portable and light. Some experiments have been made in the Government laboratory of the Industrial Chemist and the publication in vernacular of his investigation is desirable. The Kanauj perfumers shall be well advised to see the still in his laboratory. If any particular firm prefers the method of associated research and is prepared to pay for it, then it should be possible to undertake it in the laboratory of the Industrial Chemist and to keep the result of the investigation confidential for a certain period, say three years.

(5) and (6) Most of the perfume is exported by V. P. system. But commission agents play no unimportant part in its export. They come to Kanauj dealers, buy perfumes at a big discount, both on cash and credit system, and sell them by hawking throughout the whole province. There are no fixed prices nor trade marks. Quality has to be found out by the purchasers and prices are settled after great deal of higgling. The result is uncertainty and much loss of time which are repugnant to the modern Indian. To remove these defects it is suggested that well-established factories of reputation should adopt various trade marks for goods of various qualities. It is hoped that this suggestion will improve sales.

(7) Attractive phials are a necessity. Several perfumers of Kanauj expressed a desire for fancy phials when I was there. Correspondence was established with the various glass works in the United Provinces and the result was communicated to the perfumers. But until the perfumers can combine and place orders in large quantities, it will be difficult for them to get the phials at cheap rates. An organization on co-operative lines will help the industry in several ways. Cheap silent spirit is wanted to make essences of European fashion. The merchants have to be in touch with the public taste; all these and many others can be remedied if the perfumers were organized. They were willing to form themselves into an

association, but each was waiting for the other to take the lead.

(B)—TEXTILES.

(i) *Tents*.—The small factories at Fatehgarh cannot compete with Fatehgarh Jail or the Cawnpore Mills. The manufacture of brass eyelets will come in no time if there were a demand for them. The best way will be for the jails to try the eyelets of Lala Banwari Lal and see if they satisfy their requirement. The department is interesting itself in the manufacture of these eyelets. The local durries, ropes and *niwar* should find a purchaser in Fatehgarh Jail. But improvements are needed in (1) improving the twisting machines for ropes so as to obtain a more evenly twisted rope, and (2) increasing production by devising means to save the time which is at present wasted in (a) unlapping the warp yarn from the pole placed in the ground to hold it, (b) winding on the woven *niwar*, and (c) pushing back the healds after weaving a few inches. It should also be possible to weave more than one width at a time and thus increase production.

(ii) *Dyeing and printing*.—The Principal of the Dyeing and Printing School has written an exhaustive note of the subject which is appended to the report.

(C)—SALTPETRE.

The manufacture of manure from saltpetre by mixing bonemeal and other things with it is fraught with many difficulties.

A chemical research is necessary, and even when a formula has been obtained, the manufacture will always require expert knowledge which is not possessed by the refinery-owners. So there is little prospect of the local people starting such a factory. But the Calcutta manufacturers will find it cheaper to manufacture manure on spot and then export it. For the manufacture of manure it is not necessary to turn out saltpetre of the present purity, and the manufacture of inferior saltpetre will solve the problem of railway rates also. The Tea estates of Assam are big consumers of saltpetre as proportionately it has better manurial properties than the Chilean nitre.

(D)—BRASSWARE.

The suggestions made by the Superintendent include the introduction of better appliances like the punching press and die, better designs, wider advertisement and instruction in Moradabad tinning. What appears to be needed to carry out all these is an experimental model factory to be established at some place where it does not come in direct competition with the existing industry but is within reach of the brass-workers. A scheme for a small factory on commercial lines should be worked out and published and the location of the factory decided after gauging a demand for it by the public of the place coming forward to subscribe capital, on Government covering loss for a few years in the beginning.

A co-operative purchase will bring cheaper metal to the dealers.

(E)—POTATO AND TOBACCO.

A starch factory, if properly run, should succeed. The department is already in communication with various machinery makers of America and Germany.

A society for the joint sale of tobacco may be tried at Kampil, but the metalling of the road from the Katia station and making of the experimental station permanent are urgent matters.

(F)—FRUITS.

Are simply waiting for a capitalist to undertake the manufacture of jams, preserves and chutnies. Canning will also be a profitable business. The oil content of the peel of Kaimgunj oranges can be tested in the laboratory of the Industrial Chemist to Government and the result published in vernacular for general publication.

5. I am indebted to the Industrial Chemist to Government, United Provinces, Mr. S. T. Gadre, who has kindly revised the report and in many places improved it considerably. Thanks are also due to Mr. H. B. Shroff, Principal of the Dyeing and Printing School at Cawnpore, for writing a note on Calico-Printing. Many other gentlemen, both officials and non-officials, have helped in the survey, and thanks of the

department are due to them. The Superintendent has specially mentioned the following names:—

- (1) Babu Swaróop Narain Sahib, Rai Bahadur, Vakil,
Chairman of the Municipal Board.
- (2) Babu Debi Prasad Sahib, Vakil.
- (3) Babu Gairdan Lal Sahib, M.L.C., Vakil.
- (4) Lala Babu Prasad Sahib, M.A., Income-tax Officer.
- (5) Babu Braj Nandan Prasad Sahib, Manager of the
Co-operative Bank.
- (6) Mr. P. G. Dharwadkar, L.A.G., 1st Master, Victoria
Jubilee High School, Kanauj.

CHAMPA RAM MISRA,

Deputy Director of Industries.

24th October, 1922.

CHAPTER I.

INTRODUCTION.

1. Features of the District.

(a) *Boundaries.*—The district of Farrukhabad is bounded on the north by Budaun and Shahjahanpur districts, on the south by Etawah and Cawnpore districts, on the east by Hardoi district and on the west by Etah and Mainpuri districts. The Ganges forms the northern and eastern boundary of the district.

(b) *General features.*—With the exception of a few gentle undulations here and there, the district is level plain.

(c) *Rivers.*—The chief rivers of the district are the Ganges, the Ramganga, the Kali Nadi, the Bagar and the Isan. No river is navigable except the Ganges. Boats ply in the rest in the rainy season.

(d) *Canals.*—

Mainpuri and Cawnpore division passing through Kanauj tahsil.

Narora division passing through Kaimganj tahsil.

(e) *Railways.*—

Line.	Name of railway stations.	Mileage.
(1) B. B. & C. I. Railway.	1. Araul	...
	2. Chitamau	...
	3. Kanauj	...
	4. Jasoda	...
	5. Khudlapur	...
	6. Kamalgunj	...
	7. Bhojpur	...
	8. Fatehgarh	...
	9. Farrukhabad	...
	10. Natwara	...
	11. Shamshabad	...
	12. Kaimganj	...
	13. Katia	...
	14. Rudain	...

74

Line.	Name of railway stations.	Mileage.
(2) East Indian Railway.	1. Farrukhabad	...
	2. Ugarpur	...
	3. Nib Karori	...
		} 11

(f) Population—

(i) The population of the district in 1921 was 856,633.

(ii) List of different workers (Census figures) in 1911 :—

1. Hides and skins—

	Industrial population.	
	District.	Town.
Tanners, curriers, leather dressers, dyers	1,296	197
Makers of leather articles such as waterbags	2	...
2. Wood—		
Sawers, carpenters, turners and joiners	3,622	670
3. Basket makers	1,007	372
4. Metals—		
Makers of implements and tools of iron	...	1,113
Workers in brass and copper	624	1,533
Workers in other metals	64	91
5. Potters	2,474	380
6. Brick makers	27	71
7. Manufacturers of explosives	28	30
8. Refiners of mineral oils	5,362	640
9. Makers of soap, candle, lac, cutch and perfumes	448	171
11. Bakers	13	115
12. Grain parchers	4,706	343
13. Butchers	1,422	535
14. Makers of gur and sugar	59	21
15. Sweetmeat makers and preparers of jam and condiments	1,565	866
16. Brewers and distillers	12	22
17. Hat, cap and turban makers	47	67
18. Tailors and embroiderers	4,781	2,172
19. Shoe, boot and sandal makers	1,316	1,210
20. Other industries pertaining to dress	90	116

	Industrial population.	
	District.	Town.
21. Washing, cleaning and dyeing...	5,594	586
22. Barbers	5,507	766
23. Dealers in bone, etc.	12	17
24. Makers of glass	2	13
25. Cloth spinning, sizing and weaving	8,800	...
26. Dyeing, bleaching, printing	1,066	...
(g) <i>Ferries</i> —		
		Rivers.
<i>Tahsil Farrukhabad</i> —		
1. Gola Hospital ... ..	...	Ganges.
2. Garhaia Shikarpur ... ..	...	Do.
3. Daraura ... ..	...	Kalinadi.
4. Kumbhauri ... ..	...	Do.
5. Sahaspur ... ..	...	Do.
6. Singhi Rampur ... ..	...	Ganges.
<i>Tahsil Kaimganj</i> —		
1. Bhagwanpur ... ..	...	Ganges.
2. Bahbalpur ... ..	...	Do.
3. Pindara ... ..	...	Do.
4. Chhidpuri ... ..	...	Do.
5. Surajpur ... ..	...	Do.
6. Behta Nihal ... ..	...	Do.
<i>Tahsil Chibramau</i> —		
Udharanpore ... ..	...	Kalinadi.
<i>Tahsil Kanauj</i> —		
1. Doefipur ... ..	...	Ganges.
2. Daipur ... ..	...	Do.
3. Rajghat ... ..	...	Do.
4. Khnsamkor ... ..	...	Do.
5. Mehdighat ... ..	...	Do.
6. Kakarghata ... ..	...	Isan.
7. Gulragor ... ..	...	Do.
<i>Tahsil Aligarh</i> —		
1. Amaiyapur ... ..	...	Ramganga.
2. Karanpur ... ..	...	Ganges.
3. Allahganj ... ..	...	Ramganga.
4. China ... ..	...	Do.
5. Ashrafpur ... ..	...	Do.

The rivers are navigable from July to November.

(h) Roads—(i) Metalled Provincial Roads :—

Name of road.	Miles.
(1) Grand Trunk Road—	
Aligarh, Etah and Cawnpore section ...	48
(2) Bareilly-Fatehgarh-Gursahaiganj Trunk Road ...	29
(3) Etawah-Bewar-Fatehgarh Branch Road ...	29
Total	106

(ii) Local metalled roads :—

Local roads:	Miles.
Farrukhabad Kaimganj Road ...	18
„ Ghatiaghat Road ...	2
„ Yakutganj Road ...	4
Fatehgarh Kadri Darwaza Road ...	2
„ Laldarwaza Road ...	3
Circular Station Road ...	3
Rakha Road ...	1
Kaimganj Railway Feeder Road ...	1
Shamsabad Railway Feeder Road ...	2
Raushanabad Railway Feeder Road... ..	1
Kaimganj and Kampil Road ...	5
Farrukhabad and Pattia Road ...	3
R. M. R. Good-shed Road ...	1
Muhammadabad Railway Feeder Road ...	2
Ugarpur Railway Feeder Road ...	1
Kanauj to Sarai Miran Road ...	1
Bela Tirwa Road ...	9
Total	59

(iii) Unmetalled roads :—

1. Kaimganj Kampil and Gauri Mahadeopur.
2. Farrukhabad Aliganj.
3. Nawabganj Faizbagh.
4. Sambehipur, or Nawabganj Muhammadabad.
5. Talgram Chhibramau.
6. Tirwa Phatia.
7. Tirwa Indergarh.

8. Indergarh Saurikh.
9. Aligarh Imratpur.
10. Fatehgarh Sandi.
11. Farrukhabad Chhibramau Ayrua.
12. Bela Talgram.
13. Thatia Kanauj.
14. Mehdighat Kanauj.
15. Khudaganj Singhrampur.
16. Tirwa Bela.
17. Kaimganj Aliganj.
18. Mehru pur Manpatti.
19. Nile Karori Mohamdabad.
20. Tirwa Khaernagar.
21. Aligarh Singhrampur.
22. Amethi Qld Ganga Darwaza.
23. Burnaman Rakha.
24. Jasoli Terwalla.
25. Lakboola Bagh Road.
26. Naugawan Nonamganj.
27. Roshanabad Railway Feeder.
28. Laldarwaza Rakha.
29. Chaurasi Narainpur.
30. Daipur Ghat Grand Trunk Road.
31. Farrukhabad Punthar.
32. Kali Naddi Singhrampur.
33. Bewar Nekpoor.
34. Colonelganj Rakboola.
35. Gursahaiganj Rakha.
36. Gangaganj Singhpur.
37. Rajghat Sharifabad.
38. Allahganj Imratpur.
39. Amanabad Bagor.
40. Ataipur Bhagwanpur.
41. Ayrua Saurikh.
42. Bahadurpur Gauntia.
43. Bagh Mahtab Rai and Bhojpur.
44. Baraun Paithan and Manjha.
45. Phanpur Kumholighat.
46. Bharatpur Sahebganj.
47. Bhojpur Shekpur.
48. Bishangarh Chhibramau.
49. Bela Sakrawa.

50. Bela Saurikh.
51. Bidhuna Talgram.
52. Bela Thatia.
53. Bishungarh Kumaulighat.
54. Bishungarh Saurikh.
55. Chidpuri Kaimganj.
56. Farrukhabad Rupnagar.
57. Farrukhabad Panpalpur.
58. Farrukhabad Imratpur.
59. Gursahaiganj Gauripore.
60. Ghatiaghat Karoli.
61. Gursahaiganj Talgram.
62. Ghatiaghat Imratpur.
63. Ghatiaghat Gautauli.
64. Hardoi Kanauj.
65. Imratpur Shamshabad.
66. Indergarh Jorbapur.
67. Jallalabad Kanauj.
68. Jaraari Kamalganj.
69. Jallalabad Uncha.
70. Jallalabad Pachor.
71. Kaimganj Sarai Aghat.
72. Kamalganj Mohamadabad.
73. Kaimganj Shamsabad.
74. Karanpur Surajpur.
75. Kaimganj Pindare.
76. Katchwagora Mohammadpu
77. Kaunwar Sawasi.
78. Kamalganj Marhiaghat.
79. Kumholiganj Manpatti.
80. Kampil and Jattaghat.
81. Karhar and Mohamadganj.
82. Maryghat and Shekpur.
83. Mohamadganj and Mariyagt
84. Madhonagar and Tiryaghat.
85. Nagha Durga Auther.
86. Rakha Nanaua.
87. Surara Shadnagar.
88. Talgram Yaqtganj.
89. Gandharapur Anogi
90. Kaimganj Rudain.
91. Surajpur Bhadosi.

(i) *Market places—*

Kaimganj ...	...	Saturday, Tuesday.
Ghanipur Jogpur ...	...	Sunday, Wednesday.
Jalalabad ...	...	Tuesday, Friday.
Jaspurapur ...	...	Wednesday, Saturday.
Saraiyan ...	...	Ditto.
Fatehpur ...	...	Wednesday, Sunday.
Mianganj ...	...	Monday, Saturday.
Ganj Tirwa ...	...	Thursday, Monday.
Tirwa Khas ...	...	Wednesday, Sunday.
Thatia ...	...	Tuesday, Friday.
Belamau ...	...	Tuesday, Friday.
Saraiyan ...	...	Ditto.
Khairnagar ...	...	Sunday, Wednesday.
Basta ...	...	Ditto.
Linji Ganj ...	...	Daily.
Muhammadabad ...	...	Sunday, Wednesday.
Farrukhabad Mohalla Kha-		
takpura ...	...	Saturday, Tuesday*
Ghuma ...	...	Ditto.
Nilbalpur ...	...	Friday.
Arraha Paharpur ...	...	Wednesday, Saturday.
Kamalganj ...	...	Tuesday, Friday.
Rajepur ...	...	Monday, Tuesday.
Khudaganj ...	...	Wednesday, Saturday.
Kori Khera ...	...	Sunday, Wednesday.
Lahna Nagla Manpatti ...	...	Monday, Thursday.
Bihar Khas ...	...	Sunday, Thursday.
Nib Karori ...	...	Monday, Friday.
Islamnagar ...	...	Ditto.
Bahadurpur ...	...	Sunday, Thursday.
Salempur ...	...	Wednesday, Saturday.
Akbarpur ...	...	Sunday, Wednesday.
Sikandarpur ...	...	Monday, Thursday.
Kasama ...	...	Sunday, Thursday.
Bishangarah ...	...	Wednesday, Sunday.
Serai Gopal ...	...	Ditto.
Talgram ...	...	Monday, Friday.
Nurganj ...	...	Sunday, Tuesday.
Salempur ...	...	Saturday, Friday.
Sarai Prayag ...	...	Sunday, Wednesday.
Tera Jakut ...	...	Ditto.

Samdhin Tuesday, Saturday.
Moradganj Monday, Thursday.

(j) Fairs—

Name of place.	Fair.	Date.	No. of visitors.	Remarks.
Singhi-Rampur (Kamalgunj).	Dasehra Jeth	3-6-'22	70,000	
Ditto	Kartiki ...	3-11-'22	60,000	
Sheikhpur	Sheikh Saheb	15-2-'22	5,000	
Toka and Ghatiya Ghat (Far- rukhabad).	Dasehra Jeth...	3-6-'22	20,000	
Ditto	Kartiki ...	3-11-'22	25,000	
Gudhni (Kanauj)	Debiji ...	Every Tuesday.		
Siar Mau	Do ...	Chait Sudi Ashtami.		
Tirwa Khas	Do. ...	Baisakh Suditij.		
Sirsa	Shivaji ...	Sheoratri.		

FARRUKHABAD DISTRICT.

CHAPTER II.

Description of, and suggestions for the improvement of, the various district industries.

I—Art Industries.

(a) *Drawing of gold and silver wire.*—One Hira Lal goldsmith, has recently started the work of drawing gold and silver wires by means of machines which he has purchased from Calcutta. He has purchased 2 machines, one for flattening gold into leaves and the other for drawing wire. Both these have cost him Rs. 1,500. The daily outturn of silver wire is 12½ seers. The work is done on wages at the following rates:—

	Rs.	a.	p.	
Good quality silver	...	2	0	0 per Rs. 100
Chharri (alloyed silver)	...	2	8	0 „ „
Subra (ditto)	...	0	0	9 per rupee.
Gold wire	...	0	1	0 per tola.

(b) *Gota weaving.*—The *gota* industry of Farrukhabad is on the decline. Farrukhabad *gota* suffers in competition with Lucknow manufacture because of its having less gold and silver in it. The business also suffers for want of honesty and lack of finish. About 20 families of Muhammadan weaver do this work. Ladies mostly weave at their homes. The warp is prepared by men and the material is advanced by dealers who are 10 to 12 in number. The charges are 3 annas to 4 annas per *than* of 25 yards. The daily outturn is 250 tolas.

II—Chemicals.

Refining of saltpetre.

Condition of industry.—Farrukhabad has about 16 salt petre refineries. During the time of the great European war the number had risen to 22, as there was an abnormal demand for refined saltpetre. But on the cessation of hostilities the

demand decreased and resulted in the closing down of several of the factories. The refineries of Messrs. Badri Das Gopi Nath and Bholu Nath Shanker Lal are said to have an invested capital of about Rs. 1,50,000 respectively, but ordinary refineries are run with a capital of about Rs. 20,000 to Rs. 30,000 each.

Royalty.—The zamindar of the village from which nitrous earth is scraped charges royalty at rates varying from Rs. 20 to Rs. 200 per year. The rates ranged during the war between Rs. 20 and Rs. 500, but again they have dropped down to the pre-war rates. Lunias can obtain a licence for the manufacture of crude saltpetre for Re. 1 annually.

The refiners of saltpetre have to obtain a licence from Government on payment of Rs. 50 annually. The licence is renewable every year on the 1st of August.

Process of manufacturing crude saltpetre.—Nitrous earth is scraped from old inhabited sites and placed on a straw mat supported on a frame made by fixing bamboos crosswise on mud ridges. Water is poured over it, with the result that earth remains on the top, while the solution containing salt and other soluble impurities fall in a receptacle put under the mats. The liquor thus obtained is boiled in big *karhais*, and when the required (*ghashni*) saturation is obtained it is allowed to cool down. The crystals thus obtained are of crude saltpetre mixed with salt and other impurities. The Lunias who do this work stop it for 4 months in the year, i.e., June to September. The product contains common salt, insoluble matter and 30 to 40 per cent. of pure nitre.

Process of refining saltpetre.—The crude saltpetre is then refined in factories called “refineries.” For purposes of refining, the crude saltpetre is dissolved in boiling water in big iron pans. The solution is then boiled down to the necessary consistency and transferred to a removable wooden vat. The earth and salt settle down in two or three hours, when the liquor is removed to another vat. The liquor has to pass through seven such vats one after the other and is allowed to remain for one day in each vat. Crystallisation is accelerated by dipping straw pieces in the solution, and saltpetre settles down in long prismatic crystals. The saltpetre thus obtained is again washed before being stored up for purposes of export to Calcutta. From there it is sent abroad for the manufacture

of gunpowder and other chemicals. This washing certainly reduces the quantity of saltpetre, but it takes away the yellowness and imparts to the saltpetre a white colour and increases its value. The washings are again boiled and they yield a small quantity of saltpetre again. Generally saltpetre of about 5 per cent. refraction is manufactured.

Out of 100 maunds of crude saltpetre—technically called *jaria*—30 to 40 maunds of refined saltpetre are obtained and the residue consists of salt and earth in equal proportions. After saltpetre has been removed from the vats for storage, the liquor that is left over still possesses a good quantity of salt and earth. It is boiled once more in order to separate salt from the earth. By boiling, the earth comes up on the surface and is separated from the salt. After payment of a duty of Rs. 1-4 a maund the salt is sold at a profit of one anna to 4 annas per maund by the owners of the refineries.

Raw material.—The refineries purchase crude saltpetre locally and also import it from the neighbouring districts of Etawah, Mainpuri, Etah, Shahjahanpur, Hardoi, Aligarh, Badaun, Cawnpore and Agra. The total quantity of crude saltpetre imported in this district is estimated at above 100,000 maunds. Some fix it at 130,000 maunds. Some 30,000 maunds come from the Punjab and the rest from other districts of our province. Exact figures cannot be obtained as the information cannot be extracted from railway records without a considerable extra expense.

Disposal of finished product.—All refined saltpetre is exported to Calcutta. Farrukhabad exports saltpetre worth Rs. 60,000 a year. A very little quantity is exported to Bombay and still less to Cawnpore by Messrs. D. Waldie & Co.

Quality exported.—Two kinds of saltpetre are exported—one is the big grain which goes to China and the other is of a finer grain which is exported mostly to the United Kingdom.

Wages.—Wages are paid to labourers at the rate of Rs. 11 and Rs. 12 per month. The fluctuation in the wages has been regulated by two entirely conflicting forces :—

- (1) The abnormal war demand for saltpetre died out on the cessation of hostilities, resulting in the closing of several refineries and throwing out of employment a large number of labourers.

(2) The prices of daily necessities of life have risen very high, necessitating a corresponding rise in the wages of labourers.

Railway freights.—There is a general complaint amongst the saltpetre refiners about the rise in the railway freight. The railway freight has gone up from Re. 0-10-8 per maund plus Re. 0-1-6 for war fund, total Re. 0-12-2 to Rs. 1-9-9 per maund.

Marketing system.—The refineries export the saltpetre to their agents in Calcutta who sell it for them. One firm has of late begun to export its product direct to big firms like that of Messrs. Shaw Wallace & Co, of Calcutta without the mediation of other agents. No advertisement system has been adopted. Saltpetre-refining goes on throughout the year. The supply is, therefore, regular.

Use of saltpetre.—Saltpetre is generally used in the manufacture of gunpowder and for medicinal purposes. And enquiries show that it is also a very good manure for sugarcane crop: Messrs. Shaw Wallace & Co., Calcutta, manufacture artificial manure for tea gardens by mixing saltpetre with bonemeal and other ingredients.

Profits.—The daily outturn in an ordinary *kothi* is 9 maunds of refined saltpetre per 2 *karhais* or pans.

	Value.
	Rs.
<i>Jaria</i> 18 maunds at Rs. 4 a maund ...	72
Fuel 12 maunds @ 1 maund 8 seers per rupee...	10
Wages for 8 men required for two pans at Rs. 11 and Rs. 12 per mensem ...	3
Total ...	85

Rs. a. p.

This produces 9 maunds of refined saltpetre.

Selling price of 9 maunds of saltpetre which according to Calcutta maunds comes to 11½ maunds ...

Railway freight to Calcutta ... 115 0 0

Total expenditure, Rs. 85 plus Rs. 16-1-6 equals

Rs. 101-2-6.

Profits, Rs. 13-13-6 or 10 per cent. roughly.

Price of salt at Rs. 1-8 a maund minus duty on salt @ Rs. 1-4 a maund equal to 4 annas a maund to be added to profits for 4½ maunds, Rs. 1-2.

Total profits... .. Rs. 13-13-6 plus Rs. 1-2 equals Rs. 16 roughly.

During the war the refiners made large profits—at least 25 per cent. The market is dull at present, but with the return of normal conditions the demand for saltpetre will increase.

The present is only a temporary set-back, otherwise the industry is not decaying and it is a fairly profitable business.

Suggestions for improvements.—No machinery is at present used in the manufacture of either crude or refined saltpetre, but the necessity of a quicker mode of refining is felt.

Manure should also be manufactured out of it. Its extended use for sugarcane or other crops as manure will give a great impetus to the industry. It will be more economical to turn saltpetre into manure and then export it as it will then be surely booked at a lower rate. For manure, it will not be necessary to manufacture saltpetre so pure as it is made at present. The necessity of revising the railway rates has already been pointed out above.

III.—Food grains.

The following statement shows the average produce of the agricultural products during the last five years:—

Number	Name of crop.	Area in acres	Outturn per acre.	Average annual production of last five years	Prices per rupee.	
					Srs.	Ch.
1	Juar	7,826	4 mds.	31,304 mds	8	0
2	„ with arhar	87,339	5 „	436,695 „	...	...
3	Bajra	31,884	5 „	159,420 „	7	4
4	„ with arhar	63,510	6 „	381,060 „	...	...
5	Dhan Kuari	7,977	8 „	63,816 „	}	8 0
6	„ Aghani	27,328	10 „	273,280 „		
7	Cotton	15,420	6 „	92,520 „	3	12
8	Maize	35,904	8 „	287,232 „	10	0
9	Sugarcane	19,917	20 „	398,340 „	...	...

Number.	Name of crop.	Area in acres.	Outturn per acre.	Ave age annual production of last five years.	Prices per rupee.
					Srs. Ch.
10	Indigo ...	3,709	5 seers o cakes.	18,545 mds.	...
11	Wheat ...	*13,760	8 mds.	*Area grows rape and duan mixed with wheat.	6 8
12	Wheat grain and Bejhar.	*139,804	8 ..	Ditto ...	7 0
13	Barley ...	*16,731	12 ..	Ditto ...	10 0
14	Gram ...	14,323	10 ..	143,230 mds.	9 0
15	Potato ...	23,916	80 ..	1,913,280 mds.	25 0
16	Tobacco ...	12,383	7 ..	86,681 mds.	3 8
17	Opium ...	5,996	7 seers	41,972 srs.	...
18	Garden crops (vegetable).	1,757	15 mds.	26,355 mds.	...
19	Melons, etc. (Tarbuz and Kharbuza).	2,194	75 ..	164,550 .	...
20	Chena (millets)	132	5 ..	660 ..	...
21	Oilseeds ..	672	8 ,	5,376 .. rape, arandi, alsiduan and tili.	5 8

It will be seen that the chief products of the district are cotton, tobacco and potato. Their acreage and outturn per acre in 1921 are as follows :—

Crops.	Area in acres.	Yield per acre.
Cotton ...	15,420	6 maunds.
Tobacco? ...	12,383	7 ..
Potato ...	23,916	80 ..

The district has no industries connected with any of the food grains except a few flour mills, about which particulars are given in Chapter IV—'Statistics.'

IV.—Hardware.**(a) Manufacture of brass and copper utensils.**

Present position of the industry.—India is still in the Metal Age and a man's social status is still measured by his possession of metal utensils. With the advent of Western civilization the use of chinaware has been introduced in some families who have adopted English ways of living. The rise in the prices of metals has led people who have no religious scruples to use enamelled and earthenwares. But the total use of these wares would not exceed 5 or 6 per cent. This is inconsiderable and is not likely to affect the metal industry to any appreciable extent for a long time to come. The rise in prices and restricted import of raw material gave a temporary shock to this industry during the period of war. But there is every probability of Farrukhabad recovering from it with the return of normal conditions.

Import of raw material.—The firms get brass and copper sheets mostly from Bombay and to some extent (about 1/16th) from Calcutta and Karachi, where they are imported from Germany, France, England, America, Italy and Japan. Brass is imported chiefly from Bombay and copper from Calcutta.

Articles manufactured.—Only domestic articles of everyday use are made in Farrukhabad. Articles such as *patili*, *ghanti*, *tasla*, *parat*, *katordan* and *pandan*, etc., are generally made of sheet brass, while *lagan*, *degs*, *sarposh*, *patili* and *tashtari* are made of copper. Brass vessels are made for the Hindus, while copper ones find favour in Muhammadan households. Hindus have religious scruples in using copper vessels for many domestic purposes.

Export.—Finished products are exported to Cawnpore, Lucknow, Agra and Meerut in the United Provinces. Agents of big firms of the Punjab come to Farrukhabad and buy utensils on the spot. Some export business is also carried on by correspondence.

Introduction of enamel and chinawares.—Farrukhabad does a roaring business in brass and copper wares and has about 33 firms of dealers in this industry. Eight of these

firms do business to the extent of Rs. 50,000 to Rs. 60,000 each in a year.

Manufacture and labour.—There are about 125 *karkhanas* or small factories for making utensils which give employment to about 800 workmen. Besides these, more or less 100 workmen carry on the business of manufacturing utensils at their respective houses. Dhanuks, Kahars, Brahmans and Kachhis are mostly engaged in this business. During the time of the war the abnormal rise in the cost of raw material and restricted import of metal almost paralysed the industry. About 250 workmen migrated to Jagadhri (Punjab), Cawnpore, Lucknow and Delhi. These workmen originally went to the Punjab as itinerant repairers of broken utensils, but later on importing firms persuaded them to settle there permanently by offering them better wages than what they were getting in Farrukhabad. This migration has resulted in a shortage of labour at Farrukhabad and consequent rise in the wages of workmen, e.g., the charges for manufacturing a *patili* are three times and those for making a *ghanti* double of what they were before.

Marketing system.—The following is the marketing system prevailing here. The dealer imports the raw material and makes it over to the brazier who returns him the same weight of finished vessels and chippings. The head factory man is paid at the contractual rates specified below. The factory man then gets the utensils made by workers who are also paid on a piece wage system. The dealers advance money to the factory owners in times of need, and as they are always in need, they are invariably indebted to the dealer. Similarly, the factory owners keep their workmen attached to this factory by giving lavish advances which cannot be easily repaid. This system works much to the detriment of the interests of labour which is sweated to bring a fat income to the middleman. What is therefore required is an organization of labour which may enable the workmen to carry on their business independently of the middleman. A few who can afford to invest some capital even now work independently, and get the raw material direct from the dealers and are better off than the factory workmen. Credit is allowed to approved customers to a maximum extent of Rs. 1,500.

Wages.—For brass utensils the head factory man is paid at the following rates :—

	Rs.
1. <i>Patili</i>	12 per maund.
2. <i>Ghanti</i>	5 „
3. <i>Katordan</i>	5 „
4. <i>Parat</i>	8 „
5. <i>Tasla</i>	9 „
6. <i>Pandan</i>	25 „

Three kinds of *patilis* are generally made and different rates of wages are prevalent in respect of each :—

	Rs.
1. <i>Kali</i> (having the inside quite black)	12 per maund.
2. <i>Chatkan</i> (having inside and outside both very bright)	13 „
3. <i>Goli</i> (having its bottom made of <i>bharat</i> and upper made of <i>chadar</i>)	35 „

For copperwares the rates of wages are as follows :—

	Rs.
1. <i>Patili</i>	12 per maund.
2. <i>Degs</i>	12 „
3. <i>Sarposh</i>	8 „
4. <i>Lagan</i>	9 „

The wages given by the head factory man to his workmen are as follows :—

	Rs.	a.	p.	
1. Small <i>pherdar patili</i>	0	3	0	a seer.
2. Small <i>patlidar patili</i>	0	2	6	„
3. Copper <i>patili</i>	0	2	6	„
4. <i>Ghanti</i>	0	1	9	„
5. <i>Katordan</i>	0	2	6	„
6. <i>Parat</i>	0	5	0	„
7. <i>Tasla</i>	0	5	0	„
8. <i>Tanbia</i>	0	8	0	„
9. <i>Pandan</i>	0	8	0	„
10. Copper <i>degs</i>	0	4	0	„
11. Copper <i>lagan</i>	0	3	0	„
12. <i>Katori</i>	0	3	0	„

(b) *Cast metal utensils.*

Process of manufacture.—For most of the cast metal utensils old vessels are melted and remoulded. This is called *bharat-ka-kam*. Two or three workmen join making these

utensils—one doing the upper, while the other makes the bottom—and then divide the abovementioned wages in equal proportions.

The wages for *bharat-ka-kam* are less than those for *chadar* (sheet metal); for instance in respect of an article for which Rs. 35 a maund is given if it is made of *chadar* Rs. 20 per maund is paid if it is made of *bharat* (cast metal). Brass and copper vessels are manufactured by beating out imported brass and copper sheets which is called *chadar-ka-kam*. Each separate process from the punching of the brass and copper sheets to the finish is allowed to claim the undivided attention of a separate workman. One punches the sheet and the other makes it deep, the third puts it in fire, the fourth makes the utensil by beating it out and the fifth one is a turner. The work is all performed by hand and no machinery is used.

Outturn.—The following is an estimate of the outturn :—

1. Old vessels (remodelled) ...	20 to 25 maunds daily.
2. Brass sheet ...	30 „ „
3. Copper sheet ...	20 „ „

Phool or bell metal articles are not manufactured in this district. The total value of goods turned out would be about 12 lacs rupees. Business is said to have been slack last year.

Profits.—Profits vary with the article made. The following calculation is made for a brass sheet *parat*. Ordinarily a *parat* is 25 seers in weight for the manufacture of which 28 seers of brass *chadar* is required :—

	Rs.	a.	p.
Price of brass <i>chadar</i> at Rs. 1-8 per seer (28 seers) ...	42	0	0
Deduct price of 3 seers of brass chippings @ Re. 1 per seer ...	3	0	0
Actual price of brass utilised ...	39	0	0
Add wages at Rs. 8 a maund ...	5	0	0
Total expenditure ...	44	0	0
The selling price of a <i>parat</i> at Rs. 1-15 per seer ...	48	7	0
Profits ...	4	7	0

or 10 per cent.

This calculation is based on the manufacture of a *parat*. As stated above, profits vary with the article.

A rough calculation of the profits of a head factory man will be as follows :—

For manufacturing a *pañdan* the head factory man receives Rs. 25 a maund, while he pays his workmen at the rate of Rs. 20 per maund. He earns Rs. 5 per maund. But in some cases the amount of wages paid by him to his workmen comes up to or even exceeds the wages which he gets from the dealer, e.g., his wages for manufacturing a *tasla* are Rs. 9 a maund, while he has to pay 5 annas a seer or Rs. 12-8 a maund to his workmen.

Suggestions for improvement.—(a) At present domestic utensils of sheet brass and copper such as *lotas*, *parats*, *gagras*, *handa* and *degchi*, etc., of almost similar designs are to be seen at every shop. To effect any improvement in this industry it is necessary to introduce better designs. (b) Advertisement should also be adopted. (c) Moradabad tinning. A great improvement can be effected in this branch of the trade if processes of tinning on the lines of Moradabad were known to the workmen of Farrukhabad. Moradabad people do not let outsiders learn the secret of their tinning and polishing, and unfortunately there does not exist any Government institution where such instruction could be obtained. Several dealers express their desire for learning the process of tinning and some facilities should be provided to impart them instruction in this art. The opening of show stalls will also be of advantage. Another point more important and of far more reaching effect is an organization of the workmen. This will free them from the hold of the middlemen. The Co-operative Store for the supply of raw materials is also desirable. Sheets could then be imported direct from other countries. They will then be obtained cheaper.

(c) *Cutlery and locks.*

In pre-mutiny days swords and matchlocks were made in Mau Rashidabad of tahsil Kaimganj. Knives and nut-crackers (*sarotas*) are still made in Kaimganj in small quantities. About 10 men are engaged in the work, the chief

being Brindaban, Jwala Pershad and Tota Ram. The average income of each man would be Rs. 30 to Rs. 40 a month. Cutlery is mostly sold locally to people visiting the place; very few outside orders are received. Knives sell for Re. 0-8-0 to Rs. 8 each according to their size and quality. Their finish is good and the prices compare very favourably with the prices of imported foreign articles. Besides these, 16 men are engaged in making locks. The chief man is Nathu who exports them to Muttra, Meerut and Delhi. His total outturn would be Rs. 150 monthly. The industry lacks organization and advertisement. The workmen are poor people, and unless they are organized now, a middleman will come in and usurp all the profits.

(d) *Blacksmiths.*

Sixteen or seventeen years ago when there was a military workshop in Fatehgarh Fort, there were about 1,000 blacksmiths in Farrukhabad. But since the removal of that factory to Jubbulpore most of them have left the place.

The following articles are generally made here now. They are paid by weight:—

	Rs.	ā.	p.	
<i>Kudal</i> (spade)	...	7	0	0 per maund.
<i>Khurpa</i> (hoe)	...	0	12	0 a seer now (formerly it was 6 annas).
<i>Dol</i> (bucket)	...	2	8	0 a seer.
<i>Karahai</i> (iron pan)	...	3	0	0 ,,
<i>Dhurās</i> (axles for wheels)	...	1	8	0 ,,

Y.—Leather.

Shoe-making.—Chhibramau is famous for its shoes of light weight. An ordinary shoe would weigh 25 tolas and a superior one 17 tolas. The best man is Sita Ram. The profit of a Chhibramau Chamar comes up to Rs. 2-8 a pair which is made in three days. A child's shoe is sold for Re. 1, while the prices of shoes for adults range between Rs. 2 and Rs. 4.

Ordinary shoes of Indian and European fashion are also made in the district. The daily earnings of a mochi come to Re. 0-12-0 to Rs. 1-8.

VI.—Miscellaneous.

(a) *Fruit canning.*—Farrukhabad and Kaimganj tahsils are full of groves and orchards. The average of the area under groves and orchards during the last 10 years is 4,169 acres. No accurate figures are available for the outturn, but fruits are exported to Cawnpore, Aligarh and various other places in very large quantities. Besides being exported by rail, no inconsiderable amount goes out by road in cart-loads.

The result is that many rot in the way and a good margin of profit is lost owing to the perishable nature of the commodity. I would suggest that canning of fruits like mangoes, etc., should be started here. Government should give a scholarship and send a suitable person to receive a practical training in some firm engaged in this business. Making of preserves and jams should be started on commercial lines. What again is wanting is training. As a major portion of the orchards in Kaimganj tahsil grows oranges, it should be possible to prepare jams from the local citrus fruits. Perhaps it may also be possible to distil a good essential oil out of them. Again, experiments and a scheme are wanting. If a proper scheme can be made out and expert knowledge made available, it will attract capital.

(b) *Jail Industry.*—Fatehgarh Central Jail manufactures tents, durries, newar, cotton ropes and chicks. Brass eye-lets are imported from Calcutta, Bombay and Cawnpore. Poles (sal, sakhu and bamboo) are locally purchased, as also babool wood for making pegs. Besides tents, munj matting is also made in the Jail Factory. Munj is locally purchased at the rate of Rs. 2-8 per maund. There is one oil mill here in which sarson oil is expressed by means of 4 kolhus. No appliance or machinery has been installed for the purpose of working these kolhus. Every operation is performed by hand. Sarson is purchased locally at the rate of 5 seers 2 chhataks. Seventy-five seers are crushed daily and yield 25 seers of oil.

In 1921 tents of the value of Rs. 1,95,000 were made for the use of Government officials.

White and black blankets are also manufactured here for which wool is imported from Cawnpore and Agra.

No record is maintained of the ex-convicts, but it is believed that after release, convicts, as a rule, do not follow

the professions taught to them in the jails. Expert labour for weaving munj mat is therefore obtainable with difficulty outside jails.

(c) *Potato and tobacco.*—Potato and tobacco are the chief crops of Farrukhabad district. They are principally sown in Farrukhabad, Kanauj and Kaimganj tahsils. The following table gives the average acreage and production of the last 5 years :—

Crop.	...	Acreeage.	Production in maunds.
Potato	...	23,916	1,913,280
Tobacco	...	12,383	86,681

Potato.—Farrukhabad potato is rich in starch. A starch factory was once started in Farrukhabad town, but it was equipped with machinery which was devised for it by its expert and manufactured for him by a firm in Calcutta. It did not work well, and the factory had to be closed after a short life. The causes of the failure of this laudable enterprise are variously given. The capitalist partner ascribed it to the defective nature of the machinery, while the expert lay the blame on the capitalist.

The owner of the factory is still thinking of working it if he can manage to obtain the services of an expert who could advise on the suitability of the machinery, see it installed and get it in working order. The department of Industries has started correspondence with several foreign firms with a view to find out suitable machinery and such an expert. If efforts succeed, there is every hope of a starch factory being established in the district.

Tobacco.—Kanauj and Kaimganj are the principal tahsils where tobacco is grown on an extensive scale. Kampil in Kaimganj is known for its tobacco far and wide. It is one vast field of tobacco with an area (as shown by the patwari's papers) under cultivation of tobacco of 190 acres and an estimated annual outturn of 1,330 maunds valued at over Rs. 15,200. Tobacco is exported principally to Simla, but also to Bareilly, Meerut, Moradabad and other places. The potato and tobacco growers of Kampil have to send their consignment to their trade agents in Kaimganj. The latter sell them to outside traders who periodically visit Kaimganj for purchasing these commodities. A society for the joint sale

of the produce would work very profitably and eliminate the profits of the middleman.

Secondly, if Katia, an experimental railway station recently opened on the B. B. & C. I. Ry., is made permanent and the name of Katia is changed into "Kampil Road," the traders will be attracted to visit the place direct. They will thus be in direct touch with the actual producers and the middleman's profits will be eliminated.

Thirdly, the unmetalled road from Katia to Kampil should be metalled. It is a small feeder road of about 2 miles.

Fourthly, the potato being rich in starch, the distillation of alcohol out of it is considered to be a practical proposition.

Fifthly, it will be more profitable to export tobacco in a manufactured state in place of sending it out in a raw condition. The manufacture of cigars and cigarettes can also be undertaken, and experiments in that direction ought to be undertaken. The present variety of tobacco is not considered suitable for their manufacture, but it can be improved.

General.—Trade in potato and tobacco can be developed very easily. It is still on no small scale. Kaimganj alone exported 55,255 maunds of potatoes and 24,254 maunds of tobacco in 1921.

Much difficulty was experienced in collecting these figures from the railway daily returns. Unfortunately figures for the whole district are not available, but almost the whole of the produce of the district is exported.

VII.—Oils.

Essential oils.—Jaunpur, Ghazipur, Kanauj and Lucknow in the United Provinces have been noted from ancient times for the manufacture of perfumes and perfumed oils. Of these, Kanauj is in the Farrukhabad district. The importance of Kanauj now lies in the existence of this industry, though the town has lost much of its former grandeur.

Present condition.—The perfume industry is carried on on all three systems—the cottage, the small and the big factory. There are about 150 firms which deal in different kinds of perfumes, most of the Itr firms here are of mushroom growth which have no status whatsoever and which supply outside orders by making purchases locally. It has not been possible

to estimate the actual figures of production in the absence of railway export figures, but enquiry shows that the annual output is nothing short of Rs. 12 lacs worth of Itrs. The perfume industry may be divided into 2 branches :—

1. The distillation of sandalwood oil both for—
 - (a) purposes of export, and
 - (b) use otherwise than for the manufacture of scents locally.
2. The preparation of Itrs proper from the distilled sandal oil.

Distillation of sandalwood oil.—There are only two big factories for distilling sandalwood oil—one in Makrandnagar owned by Messrs. Mathura Prasad Suraj Prasad and the other in Kanauj owned by Messrs. Sorabjee Rewashankar. A few other firms manufacturing perfumes distil small quantities of sandalwood oil for their use, but most of them purchase it either locally or use the imported stuff. The two big factories are described in detail below.

One is carrying on its business on improved lines by means of steam power, while the other distils sandalwood from direct fired *deg* stills. There is a distinct advantage in the improved method as will be seen from the total annual outturn obtained by the two methods.

Process.—Messrs. Mathura Prasad Sooraj Prasad distil sandalwood by means of steam. Big logs of sandalwood are cut into small chips which are further ground down in a "Demon" disintegrator. The powder is then stored up in bags and subsequently transferred into stills as required. Steam is blown through this powder from the bottom of the still, which carries over the volatile sandalwood oil along with excess of water vapour into a condenser, which cools the vapours and delivers the products of distillation into receivers of a special design. The condenser is made of copper, tinned on the inside; and has a double surface cooling arrangement. Cooling is effected by a current of water which enters the erect condenser from bottom and emerges from the top. The emergent distillates, i.e., the products of distillation, are allowed to flow into copper receivers which are also tinned from the inside and are provided with a syphoning arrangement whereby the oil is retained for the most part and the separated water flows into another similar copper vessel. In the second

vessel a further separation of oil and water takes place; oil remains in the vessel and the water, which is still a milky emulsion, flows into a third vessel where a further separation takes place. It was found that even after the third separation a very small amount of oil still remained unseparated. All further aqueous fractions were therefore allowed to run into a specially made cemented tank with a proper cover, and there stored up and allowed to stand still. Babu Sooraj Prasad found it worth his while to recover any oil that separated in this tank, although it would be of a much inferior quality. (It is said that about a chhatak of oil per maund of wood is recovered in this manner. This quantity would have otherwise run to waste and its recovery therefore only added to the distiller's profit.)

This factory is equipped with four stills at present, but it is contemplated that more be added as the business expands. Each still takes a charge of $2\frac{1}{2}$ maunds at a time. Babu Suraj Prasad, who showed me round, told me that he got only one still from elsewhere for Rs. 3,000, while the other stills were manufactured at his own *karkhana* at a cost of Rs. 2,000 each. The factory consumes about 5,400 maunds of sandalwood per year and has to pay about Rs. 3,20,000 for it at the present rate. The outturn of oil comes to about 300 maunds a year, giving an average of 1 maund oil to every 18 maunds of sandalwood or nearly 6 per cent. on the weight of the wood. About two-thirds of the oil is exported to Japan, America, Java and London and the rest is consumed locally. The factory gives employment to about 75 persons receiving from Rs. 12 to Rs. 100 a month. Price of sandalwood last year was Rs. 1,600 per ton or about Rs. 59 a maund, and the railway freight and cartage came to about Rs. 85 a ton or say Rs. 3 a maund. The daily working expenses of the factory are about Rs. 150. The average selling price of oil was Rs. 18 a lb. or Rs. 36 per seer. This firm has a branch factory at Mankapur in Gonda district where the wood is distilled from direct fired *deg* stills.

The other factory is run by Messrs. Sorabji Rewashanker and has its Head Office in Bombay. It gives employment to 6 or 7 men, one man looking after each *deg*. The factory has 6 *degs* having a capacity of 2 maunds each. The *degs* are made in Farrukhabad and each weighs about 2 maunds. A carpenter cuts the sandalwood logs into small chips, which are powdered with a *sohan* (file), but the powder is not so fine as

that obtained by a machine in the other factory. Two maunds of this powder are put in a *deg* and a sufficient quantity of water added. The *deg* is covered with a close fitting lid, having a hole in the centre to allow the insertion of the leading tube, and the mouth is pasted airtight with wheat flour. The *deg* is then heated by direct fire, and the issuing vapours are cooled by a condenser which consists of a bamboo tube covered with munj string which is kept cold and wet. The receivers which are made of copper and are tinned on the inside have nothing special about their make except that they possess a particularly long neck. The body of the receiver is kept immersed in water during the distillation. These receivers are emptied every 12 hours or are replaced by a fresh set. This process of heating continues for 8 days, but the water in the tank is changed every 24 hours. This factory consumes about 540 maunds of sandalwood in a year which yields about 28 maunds of oil, which gives an average of 1 maund of oil to every 19·2 maunds of sandalwood equivalent to 5:1 per cent. of oil. It is all sold locally. Steam distilled oil is free from any marked colour or at most is slightly yellowish, while the oil distilled from the direct fired *degs* is usually of an orange brown colour and not so clear. Popular prejudice still regards the latter, viz., the brown oil, as more suited for purposes of its making.

Chief difficulties.

(a) *Sale of sandalwood.*—Sandalwood is mostly obtained from Coorg and Madras Presidency. Formerly it used to be obtained from Mysore also, but since the inauguration of a big sandalwood oil factory by the Mysore Government it has not been possible for the Kanauj perfumers to obtain sandalwood from there; rather, the Mysore Government has of late been attempting to go and bid in the Madras Presidency also. Kanauj perfumers are not big capitalists and find it difficult to bid against such a powerful competitor as the Mysore Government. Besides this the Madras Government insists on a payment of 25 per cent. in advance and the remaining 75 per cent. *within three months of the auction.* The Kanauj perfumers find it difficult to make this payment within 3 months, and various remedies have been suggested to me to overcome this difficulty, the most feasible of which is that the sandalwood may be stored in a bonded-warehouse either by the

Madras or by the United Provinces Government and payment may be made as wood is removed out of that warehouse. It seems that if the Kanauj sandalwood industry is to survive against the powerful Mysore competitor, it will be necessary for the United Provinces Government to come to its aid in one form or the other.

(b) *Supply of coal.*—Messrs. Mathra Prasad Suraj Prasad complain of want of facilities to obtain an adequate supply of coal. In the first place the supply is not regular and whatever quantity of coal is obtained, is never received in time. The prices of coal have certainly risen and the present rate prevalent at the colliery is Rs. 13 per ton or about Re. 0-7-6 a maund. The railway freight is Rs. 10-8-0 per ton and the loading and unloading charges come to Rs. 2. It means that the cost of coal per maund actually delivered on the spot is about Re. 1.

ITRS AND OIL PERFUMES.

The methods followed are :—

- (a) distillation, and
- (b) cold enfleurage.

The distillation method is followed for the preparation of Itrs while the enfleurage method is adopted for the preparation of scented oils. No pomade or other articles are manufactured in Kanauj. No attempt has been made to manufacture synthetic products, but these are imported in large quantities for adulteration of Itrs, which are supposed to be made from natural products.

Process of manufacture of oil.—For the preparation of scented oils, tilli is invariably used for enfleurage. The seed is moistened and by gentle rubbing its external skin is removed. The clean white seed is air dried and spread on the floor in layers alternating with layers of flowers, the object being to absorb the essential oil in the fixed oil contained in the seed. This goes on until one complete *ghani* (charge of kolhu) is obtained. Occasionally, when one set of flowers gets dried up, another fresh layer is put on it. The quality of oil depends upon the number of times this process is repeated. When a *ghani* is ready, oil is expressed with the help of kolhus. Sometimes the cake is again immersed in oil or mixed

with the scented tilli and pressed. This gives oil of an inferior quality. The oil cake is used as an hair-wash.

	Rs.	a.	p.
One maund tilli costs ...	12	0	0
Two maunds chameli flowers ...	50	0	0
Wages of expression ...	10	0	0
Total ...	72	0	0

Outturn of oil from one maund of tilli is 15 seers, which is sold at Rs. 5-8-0, equals Rs. 82.

The price of oil depends upon its quality and the quantity of flowers used.

Process of manufacturing Itr.—In distilling Itr, the furnace is heated directly with wood fire. Sandal oil which is the base for Itrs of superior quality is put in the receiver. The scented steam passes on from the still (*deg*) to the receiver where the essential oil is absorbed by the sandalwood oil. Generally 2 seers of sandal oil are placed in the receivers. Usually *degs* holding 20 seers of flowers are used, but stills and receivers with a larger capacity are also to be seen. It takes about 40 days to prepare Itr of the superior quality. The process of absorption of scent by oil is repeated several times in this interval by changing the flowers in the *deg* from time to time.

Calculating roughly, the cost of Itr of superior quality would be as follows :—

	Rs.	a.	p.
Price of 2 seers of sandal oil at Rs. 45 per seer ...	90	0	0
Price of 20 maunds of rose flowers required for 40 days at Rs. 30 per maund ...	600	0	0
Cost of fuel for 40 days at Re. 1 a day ...	40	0	0
Total ...	730	0	0
Establishment—			
One man to look after the <i>deg</i> ...	20	0	0
About 5 gross phials at Rs. 3 ...	15	0	0
Grand Total ...	765	0	0
The sale price of rose Itr for 184 tolas at Rs. 7 per tola ...	1,288	0	0
Profits ...	523	0	0

The services of travelling agents are usually utilised for advertisement and have to be remunerated by a very liberal discount. This coupled with the fact that Itr deteriorates rapidly, leaves the margin of actual profit at a much lower figure. Agents buy the goods on their own account and sell them by hawking from place to place. Kanauj Itr thus reaches the whole of India and penetrates even into the villages.

A very large variety of Itrs is manufactured here, such as Rose, Keora, Motia, Hina, Khas, Champa, Molsari, etc., and the sale price of each of these ranges between 14 annas to Rs. 15 per tola. Besides these, Ottos (or ruh) of Rose and Khas are also manufactured and sold from Rs. 30 to Rs. 60 and Re. 1 to Rs. 5 per tola respectively.

Suggestions for improvement.—The factories here are generally concerned with the manufacture of perfumes chiefly from indigenous raw material, and India which depends upon her natural resources only cannot afford to lose any time in her attempt to develop them so far as flowers and plants are concerned. The average acreage of the last 10 years under Bela is 123, Chameli 145 and Gulab 265. It is said that the soil of Kanauj is not congenial to the growth of Rose and Jasmine; but any defect in soil can, I think, be removed by proper cultivation and irrigation. These are also likely to increase the oil content of the flowers. The scarcity of irrigation facilities appears to be the chief stumbling block in the expansion of the cultivation of these flowers. A very small portion of this tahsil is irrigated by canals, which do not touch Kanauj.

The estimated yield of Bela, Chameli and Rose flowers per season is 5, 1 and 15 maunds respectively, giving a total of 725, 145 and 3,975 maunds. This is quite insufficient to meet the demands of so many factories at Kanauj. This necessitates the perfumers to move to other places such as Barwana, Hathras, Sikandra Rao in Aligarh district and Bharatpur State in Rajputana in search of raw materials. Sandalwood oil is still used as a base for high class perfumes; but for cheap inferior varieties bland mineral oils are coming in increasing use. Parties of distillers migrate with portable stills and accessories to extract Itrs on the spot.

I noticed that flowers are put into the stills without having been cleaned previously.

The process of distillation is crude and the introduction of improved stills is a great necessity to ensure a greater out-turn. Standardization of quality is very much needed to control the manufacture and check the increasing use of bland oils as a base. The firm of Messrs. Ghasi Ram Shyamal exclusively sells foreign scents in large quantities, and I understand that most of the Kothiwalas in the city purchase its foreign scents for purposes of adulteration. The adoption of distinctive brands and sealed phials with fixed price lists by the chief firms of Kanauj will go a long way to effect this much-needed improvement.

More attractive phials should be used. The present unattractive phials are generally imported from Bombay at a price of Rs. 3 to Rs. 3-8-0 per gross.

VIII—Pottery.

Pottery.—There is a special class of potters called Kasgars living in the town of Farrukhabad who make earthenware out of *chikni mitti*. Coloured pots and dishes are made with floral designs on them. The prices for these are as follows :—

Handi ...	...	...	1 to 4 annas.
Kunda ...	...	...	1 to 4 „
Rakabi ...	...	...	3 to 6 pies.
Martban ...	...	...	2 to 4 annas.

No royalty is paid for earth, and ordinarily no labour is employed. But if a labourer has to be engaged, he has to be paid 8 annas a day.

Other pottery of the district is of the most ordinary domestic type and there is nothing in it which might be worth noting. The average income of a country potter would be 8 annas a day.

IX—Textiles.

A.—COTTON.

(1) *Carpet (Durrie) making.*

Condition of the industry.—The durrie industry of Farrukhabad has declined since the time that the Cawnpore Mills

have taken up this business. The number of factories has gone down from 25 to 10 and the number of workmen finding employment in them from 500 to 200. The weavers have either taken to business or have migrated to Cawnpore to find livelihood by working in the mills. All durrie weavers are living in Bhikampura, a mohalla of the town of Farrukhabad.

Process.—The process of weaving durries is given in detail in the Monograph on carpet weaving by K. Jagdish Prasad. No attempt is therefore made to describe it here.

Marketing system.—Each factory has got a head factory man who is responsible to the dealer for the raw material advanced to him and for the return of finished products to him. He secures orders from the dealers direct and gets durries prepared in his *karkhana* by actual weavers who enter into a sort of agreement with him and work for him exclusively, on getting advances by way of a retainer from him.

Raw material import.—Yarn from counts 2 to 10 is generally used in the manufacture of durries and it is imported from Cawnpore, Ahmedabad, Agra, Hathras, Delhi and Bombay.

Finished product export.—Durries are exported to Hyderabad, Delhi, Mecca and Poona, and to the tent-making factories of Cawnpore. The local supply which is very insignificant is confined to tent manufacturers only.

Wages.—Head factory man gets Re. 0-5-6 to Re. 0-10-0 per square yard and has to pay to the actual weavers at the rate of Re. 0-3-6 to Re. 0-5-6 per square yard. The wages are given on piece work system. Yarn is dyed at the rate of Rs. 8 to Rs. 10 per maund.

Outturn.—The daily outturn of all the factories in the district would be about 250 yards. During the war the outturn was something like 2,000 yards per day.

Prices.—The prices of durries vary between Rs. 1-6-0 per square yard to Rs. 3 per square yard, depending upon the quality of the yarn and the closeness of the texture. Yarn of 2 to 4 counts costs Rs. 4-8 per bundle of 10 lb., while that of 10 counts costs Rs. 7-12-0 per bundle.

Calculations for a durrie 12' x 12' = 16 square yards (12 seers in weight)—

	Rs.	a.	p.
10s yarn 24 lb. at Rs. 7-12-0 per bundle	18	9	0
Wages of a head factory man at Re. 0-8-0 a square yard	8	0	0
Total	26	9	0
Selling price of the durrie	33	0	0
Dealer's profit	6	7	0

I was told by the darogha of the Central Jail, Fatehgarh, that the jail rates for the durrie of the above size are Rs. 48.

Earning of a head factory man.—It takes 3 weavers 3 days to weave a durrie of the aforesaid dimensions and they would get Rs. 3-8-0 from the head factory man. The dyeing charges come to Rs. 2-12-0 or Rs. 10 a maund. The head factory man has thus to spend Rs. 6-4-0 out of the Rs. 8 which he gets from the dealer. Thus his earnings come to Rs. 1-12-0 a day.

No advertisement system has yet been adopted. Fly-shuttles have not been introduced in the weaving of durrries and foreign synthetic dyes are generally used. Fatehgarh Jail makes durrries only for its own consumption and uses them with the tents made there.

(2) Tent making.

History.—Farrukhabad was once a big centre for tent making. This industry has witnessed many vicissitudes. Fifty-two factories sprang up from time to time, which collapsed for one reason or the other, the chief cause of their collapse being that they could not stand competition with the mills at Cawnpore. Only 3 factories work at present besides the Central Jail which manufactures tents for Government use.

Wages.—These factories are run more or less on similar lines. Wages are generally paid on piece work system. Before the war they were :—

Tailor—

	Rs.	a.	p.	
1. Shamiana with shisham or sal chobs, kothidar	...	2	0	0 per chob.
2. Shamiana with shisham or sal chobs, plain	...	0	12	0 „
3. Double fly tent	...	1	0	0 per foot in length.
4. Single fly tent	...	0	12	0 per foot.
5. Pal	...	0	8	0 „

Mochi.—Half of the tailor, including price of the leather.

Carpenter—12 annas per chob.

Turner (who does the painting of the poles)—Rupees 2-4-0 per chob.

Blacksmith.—Rupees 8 per maund, excluding price of iron. The wages have risen one and a half times now.

Raw materials (import and export).—Cloth of the value of Rs. 18,000 is imported annually through the wholesale dealers from the mills of Ahmedabad and Cawnpore, mostly latter. This gives the Cawnpore Mills an advantage over these factories, as the former are saved the freight and the profits of the wholesale dealers.

Durries, newar, tape and rope are manufactured locally. Brass eyelets are imported from abroad, but the demand for them is not large. Hardly Rs. 200 to Rs. 300 worth of eyelets are imported in a year. Tents to the value of Rs. 30,000 to Rs. 40,000 are exported annually by the three existing firms. The exports in war days, when large Government contracts were placed with these people, rose to Rs. 1,20,000 but with the cessation of the abnormal demand of the war days, the manufacture of tents has gone down very much. Tents are exported to Native States by these firms.

Marketing system.—There is some advertisement. One firm keeps a travelling agent and the firms issue illustrated catalogues and price lists. But this is nothing when compared to the vast advertisement of the Cawnpore Mills.

Price.—Price of an ordinary Pal 8' × 8' × 6' may be estimated as follows :—

			Rs.	a.	p.
White drill for upper 34½ yards	...	...	18	13	0
Shalita (lining), 24 yards	...	...	18	0	0
Markin 18 yards	...	...	6	12	0
Rope 1½ seers	...	...	2	4	0
Niwar 2 seers	...	...	3	4	0
3 Bamboo poles	...	...	0	12	0
Painting bamboo poles	...	...	0	6	0
Carpenter's wages	...	...	0	6	0
Tailoring charges	...	...	3	0	0
Mochi's charges (including price of leather)	...	...	1	8	0
Thread	...	...	1	0	0
			<hr/>		
Total	...	...	56	1	0
Sale price	...	...	80	0	0
			<hr/>		

Suggestions for improvement.—(1) The use of inferior material is one of the reasons for the decay of tent industry in this district. The manufacturers here admit that the finish of the Cawnpore Mills is decidedly superior to theirs. Better finish may improve sales.

(2) Brass eyelets should be made locally. Though the present consumption of eyelets in Farrukhabad, outside the Central Jail, is not very large, but if it were possible to make good eyelets, an export trade can easily be set up with other districts in the province and with other provinces. Tape and rope are even now exported largely and eyelets could also be sent out with them. An attempt was once made, but the eyelets turned out locally with hand appliances did not prove to be satisfactory. Thirty per cent. snapped in fixing on the tents against a similar wastage of 10 per cent. in the case of imported articles. The cost of hand-made article was also higher than the imported one. B. Banwari Lal is making an experiment with the aid of the machinery already working in his factory. He sent me a few by way of sample and I showed them to M. Gulzar Ahmad. The latter liked them and thought them to be satisfactory. He is prepared to put up a special plant and manufacture eyelets on a commercial basis

if sufficient orders were secured. I found no stock of tents kept by the local firms. I think they are manufactured to order. No staff is regularly maintained except at M. Gulzar Ahmad's who keeps two to three men and finds work for them even if orders are not in hand. But I doubt very much if the tent industry of Farrukhabad has any chance to stand against the competition of the mills with cheaper raw material, better organization, larger capital, wider advertisement and superior finish. The only redeeming feature is that labour in Farrukhabad is cheaper than in Cawnpore.

(3) *Newar.*

The following statement shows the condition of newar industry at present :—

	<i>Present.</i>	<i>War Time.</i>
Factories	10—12	30
Workmen	300	1,000
Daily outturn	5 to 10 maunds.	25 to 30 maunds.

The local consumption is almost nominal, the regular purchasers being the tent manufacturers. The outturn is almost all exported to Cawnpore, Agra, Bombay and Rawalpindi (where Boota Singh is the chief purchaser) and Delhi. A head factory man gets from Rs. 7 to Rs. 20 per maund and has to give to his workmen at the rate of 2, 3, 4 and 5 annas, average $3\frac{1}{2}$ annas per *than* of 50 yards. An average *than* (piece) is $1\frac{1}{2}$ to 2 seers in weight. The width of a *than* varies from 1" to 6". Yarn of counts 6 to 40s is ordinarily used. Its present prices are :—

	Rs.	a.	p.
6 counts yarn	6	14	0 per 10 lb.
10 counts yarn	7	12	0 ,,

Yarn thus costs Rs. 50 to Rs. 60 per maund of newar which would sell Rs. 65 to Rs. 95 per maund. The marketing system is the same as in the case of durries. The list of dealers is also the same.

Women also weave newar in their houses during their spare time. The daily outturn of a newar weaver is about 50 yards.

(4) *Calico printing.*

(1) *History.*—The art of calico printing principally originated in Kanauj, but the patronage of the Muhammadan

Nawabs imported it into Farrukhabad, with the result that this industry is now languishing in Kanauj and flourishing in Farrukhabad. Under the royal patronage the Kanauj artisans migrated to Farrukhabad and settled there, and various improvements were introduced and beautiful curtains and table cloths now turned out here are appreciated not only in India but also in England and other foreign countries.

(2) *Condition of Industry*.—In Farrukhabad City the trade is monopolized by the Sadh community. There are about 12 big firms which deal in curtains of superior style, and about 25 big and small firms deal in lihafs and fards. Curtains worth 4 to 5 lakhs of rupees and fards of a similar value are turned out annually. No newspaper advertisement is resorted to. Though the advantages of advertisement are recognised by these people, want of enterprise prevents their investing any capital in advertisement.

(3) *Labour*.—Not many years ago, there were about one thousand workmen engaged in this industry. Labour is recruited from all castes, but various causes have operated to reduce its strength to 500 workmen. This has caused labour difficulty and the number of workmen is not sufficient to satisfy the needs of all the firms in this district.

(4) Payment is made by piece wage.

(5) *Course of trade*.—Lihafs, etc., are generally exported to Cawnpore or are sold locally for district consumption and export. Six firms carry on direct trade with London and Paris in curtains. Other curtain printers export their goods through the above six firms. Lately some consignments have been sent abroad for purposes of auction as a matter of speculation; these generally contain inferior material and tarnish the good name of Farrukhabad printing.

(6) *Designs*.—Designs are given to the block-makers by the firms themselves. Large sums of money are paid by them for getting new designs made for foreign sale.

Western ideas have been copied into what may be called landscape designs which mostly represent Indian jungles, *jhar* (bushes) and trees, with floral borders and figures of a few birds or animals interspread here and there. Other designs used are geometrical figures or "turanj" at corners, and flowered creepers (bel) on the borders. This is after the Muhammadan style. Prints with Persian couplets

in "Tughra" style of script are also common and liked by the Muhammadans. Hindu art has almost died out and is represented only in the recent introduction of the figures of deities, birds or animals in the designs. Most Persian designs are copied from old carpets and Western designs given by European firms are copied.

(7) *Manufacture of Blocks*.—Blocks are prepared at Kanauj, Lucknow, Farrukhabad and Jahangirabad. A block measuring 1 foot square meant for coarse work costs between Rs. 10 and Rs. 12 while a similar one with the same measurements but meant for fine work would cost between Rs. 20 and Rs. 25. Blocks for fine shawl patterns cost between Rs. 30 to Rs. 40. The total cost of all blocks for one curtain comes to between Rs. 300 and Rs. 400.

(8) *Process*.—The process of bleaching, washing and printing are not mentioned here in detail as they are already described in the monographs on—

(1) Cotton fabrics by Mr. Silberrard, and

(2) Dyes and dyeing by Mr. Hadi.

Myrabolams, castor oil, reh (impure carbonate and sulphate of soda) and various other indigenous gums and dye stuffs are utilised for making colours along with synthetic aniline and alizarine dyes.

The latter (aniline and alizarine dyes) are more freely used than vegetable dyes.

Malmal and markin are used in making curtains and table cloths, etc., and garha in making fards and lihafs. Printing on silks has also been recently introduced by a few firms.

(9) The firms of Sindurchand Sumerchand Sadhs, Shyam Lal Chunna Lal and Kunj Lal Sadh and Sons steam their prints in a "Steam Cottage" with 10 lb. pressure worked with a boiler of 20 B. H. P.

Suggestions for improvement.—A bleaching plant is in great request and is said to be the first necessity of this industry. Prints are washed at least three times before they are ready for sale, and have to remain with a washerman for at least 2 months each time. It is said that time will be economised very much by opening a bleachery, and outturn will increase. Secondly, more extensive advertisement should be resorted to. Thirdly, some means should be adopted to remove the shortage of labour. The Printing School at

Farrukhabad was an asset in a right direction. Unfortunately, it has been decided to close it from 1st September, 1922. Some other arrangement improving on the defects of the former school should be made whereby the purpose of the institution will be served. The grant of two scholarships will not remove the dearth of labour. It may be desirable to make an arrangement with some of the existing firms by which they may take a few apprentices, the Government giving the boys a small stipend for such time as they may spend in acquiring sufficient practice to be able to earn a living wage. Ordinarily this period should not extend over 6 months.

(5) *Weaving.*

The annual production of cotton in this district is 92,520 maunds. Cotton is mostly exported. The chief centres of weaving in the district are Talgram, Kamalganj and Kaimganj. The district recorded 8,495 weavers, male and female, at the census of 1911. This includes the weavers of durries and newars also. Figures for 1921 census are not available. Taking 1911 figures as a basis for calculation, the district has about 3,467 families. One loom with a throw-shuttle can turn out 9 yards coarse and 6 yards finer cloth, against 12 and 6 yards of fly-shuttle loom. Most of the yarn is imported. Yarn of 10s and 12s is mostly used. Sometimes wholesale dealers make advances in cash or yarn to the weavers and purchase the cloth woven by them. It is then exported to Agra and Cawnpore by the dealers. A handloom weaving association is a great necessity which would help in the purchase of yarn and disposal of finished produce.

Babu Banwari Lal, the proprietor of B. L. Factory, Nawgaon, Fatehgarh, has got a few fly-shuttles made at his factory and is willing to produce these on a commercial scale. His cost price for one shuttle comes to Rs. 2-8-0. But he will sell them cheaper than the imported ones, if he has an opportunity of producing them in larger quantities.

(10) *Woodwork.*

Carpenters.—Wheels, bahlis or lahrus (country carts), doors, chaukhat-bazus and ploughs are generally made in the district. No other woodwork of any importance is seen in the district. The daily wages of a carpenter range between 12 annas to Rs. 1-8. A village carpenter gets 12 annas to Re. 1, while in the town wages have gone up to Rs. 1-8-0.

CHAPTER III.

STATISTICS.

(1) Brass and copper wares.

(a) General.

Raw materials used :—

1. Brass sheets.
2. Copper sheets.
3. Old vessels.

With the exception of old vessels, all raw material is imported from foreign countries. Old vessels are imported from Nayanagar, Saharanpur, Hardoi and Rajputana. Reliable import and export figures for the whole district are not available without an extra staff being entertained to collect statistics at the railway stations. But the following figures were supplied to me under "metals" by the District Traffic Superintendent, Farrukhabad, for 1921. They are for Farrukhabad station alone :—

Import	...	...	1,075 tons.
Export	...	...	257 ,,

Manufacture.—Domestic utensils are manufactured on a large scale. They are almost all exported to the Punjab, Cawnpore and Lucknow, chiefly to the Punjab. The industry is mostly carried on a workshop basis. There are 33 firms carrying on this business and about 125 small factories giving employment to about 800 men. The particulars of one firm are given in a separate form, others are run on almost similar lines and their directory is given in the end. There are about 100 men who manufacture utensils as a cottage industry.

Season.—The work is carried on all the year round.

(b) *Particulars of the firm of Messrs. Udeychand Munna Lal described as a specimen workshop.*

1. *District.*—Farrukhabad.
2. *Industry.*—Brass and copper.

3. *Raw materials—**Import.*

- (a) *Quantity.*—1,000 maunds approximately.
 (b) *Place of origin.*—Bombay.
 (c) *Value.*—Rupees 60,000.

Export.

- (a) *Quantity* —1,000 maunds approximately.
 (b) *Place of consignment.*—The Punjab, Cawnpore, Lucknow, etc.
 (c) *Value.*—Rupees 77,500.

4. *Manufacture.*—Small factories—

- (a) *Working capital.*—Rupees 60,000.
 (b) *Labour—*
 (1) *Number of hands* —10.
 (2) *Wages and system of payment.*—By weight of articles.
 (c) *Total outturn in weight or price* —1,000 maunds or Rs. 77,500.
 (d) *Mechanical appliances.*—None.

5. *Advertisement.*—No.

6. *Season when a particular work is done.*—All the year round.

(c) *B. L. Factory, Nawgawan, Fatehgarh.*

This factory was started on a small scale in 1916. Since 1919, it is in the present flourishing condition.

Labour.—Number of hands—

Coolies	...	...	...	76
Carpenters	...	...	...	112
Sawyers (Arrahkash)	...	...	...	33

These get daily wages. Carpenters from Re. 0-12-0 to Rs. 1-10-0 a day, coolies from 6 annas to 8 annas a day. Arrahkash is paid by contract system as follows:—Rupees 4-8-0 per 100 sq. ft. for soft wood as "Teak," Deodar, and Rs. 6 per 100 sq. ft. for hard wood as "Sal," Shisham, etc.

The following staff is paid by monthly rate:—

	Rs.		
One engineer	...	80	per mensem.
Four mistries	...	30	,, each.
Four chaukidars	...	11	,, ,,
Two jamadars	...	17	,, ,,
One clerk	...	12	,, ,,
Four machine men	...	15	,, each.

Annual outturn in weight or price.—For the last 2 years the outturn in the factory has been of the value of about 2½ lacs; mostly Government work is done in this factory.

Marketing system.—No commission agents employed. Even orders from private persons received direct. No advertisement system yet resorted to, nor travelling agents employed.

H. P. of engines used.—H. P. of engine 18.

Boiler pressure 120 lbs. and H. P. 21. Manufactured by Marshall & Sons, London. It is a portable engine with boiler combined. It is used for working 2 circular saws, 2 lathes, 2 boring machines, 1 printing machine, 1 flour mill, disintegrator for lime and surkhi.

In this factory the carpentry work and moulding and lathe work are done. Blacksmith's work and the manufacture of lime and surkhi are also done.

(2) Flour Mills.

(i) *Muhammadaan Flour Mill, Raipur, tahsil Kaimganj.*

Proprietor.—Md. Farid-ud-din Khan. This mill was started 2 years back.

Capital.—Rupees 1,100.

Labour.—Two men working. The Proprietor himself works with one coolie who gets Rs. 3 per mensem.

Annual outturn—480 maunds. Grinding charges 12 annas and 8 annas per maund.

Machinery.—One oil-engine made by Blackstone & Co. Price Rs. 925.

Annual profits.—Rupees 400.

Marketing system.—No advertisement or trade agents employed. All local consumption.

(ii) *Krishna Flour and Oil Mills, Kaimganj.*

Owner.—The Proprietor of the mill is B. Sri Krishna and this mill is in existence from 1911.

	Rs.
<i>Capital—</i>	
Working capital	4,000
Capital invested in machinery, etc. ...	6,000

Labour—

Number of hands.—This mill gives employment to 8 men.

Wages and system of payment.—System of monthly payment prevails. One gets Rs. 17 per mensem, 1 gets Rs. 18 per mensem, 3 gets Rs. 10 each per mensem, 2 gets Rs. 7 each per mensem and 1 gets Rs. 8 per mensem.

Total annual outturn in weight or price.—On an average 4,000 maunds, grinding charges between 8 annas to Re. 1 per maund. The flour is used for local consumption and not exported.

Profits.—The firm earns Rs. 15 per cent. net profits annually.

Marketing system.—No advertisement or trade agents employed. The flour is sold locally. People generally get their wheat ground in the mill.

What mechanical appliances are used.—One locoportable engine combined with a boiler purchased for Rs. 4,300 or so. This steam engine is manufactured by Marshall Sons & Co., Ltd., H. P. being 10 with a boiler of 18 H. P.

This mill buys its own wheat and keeps a stock of flour for local sale.

	Rs.	a.	p.	
The grinding charges for outsiders are made as...	1	4	0	a maund.
Wheat flour	...	0	10	0 ,,
Makka	...	1	0	0 ,,
Others	...	0	10	0 ,,

(iii) Branch of the Krishna Flour Mills, Kaimganj.

Rs.

Capital—

Working capital	...	...	1,000
Capital invested in machinery, etc.	...	...	9,000

Labour—

Number of hands.—This mill gives employment to 4 men.

Wages and system of payment.—System of monthly payment prevails. One gets Rs. 13 per mensem,

1 gets Rs. 10 per mensem, 1 gets Rs. 7 per mensem,
1 female worker gets Rs. 6 per mensem.

This branch was opened only 2 months ago.

Outturn in 2 months—450 maunds of flour.

What mechanical appliances are used.—Blackstone crude oil-engine, 20 B. H. P., valued at Rs. 8,000, and other accessories valued at Rs. 1,000.

(iv) *Lakshmi Flour Mill, Kaimganj.*

	Rs.
<i>Capital</i> —	
Working capital	3,000
Capital invested in machinery, etc.	6,000

Labour—

Number of hands.—This mill gives employment to 5 men.

Wages and system of payment.—System of monthly payment prevails. One gets Rs. 15 per mensem, 2 gets Rs. 10 each per mensem, 1 gets Rs. 11 per mensem; and 1 gets Rs. 8 per mensem.

Outturn in weight or price.—This mill was started eight months ago. During this time 3,000 maunds of flour has been the outturn.

Marketing system.—No advertisement, no trade agents employed. People get their wheat ground here. All local consumption. The grinding charges being eight annas a maund.

Profits.—From the progress of the work hitherto done it is expected that a net profit of Rs. 10 per cent. would be realized out of this business.

What mechanical appliances are used.—One oil-engine B. H. P. 15, manufactured by Marshall Sons & Co., Ltd., valued at Rs. 6,000.

(v) *Ganga Flour Mill, Kampil, tahsil Kaimganj.*

Owners.—There are 4 sharers in this mill :—

1. B. Krishna Sahai.
2. P. Ram Dayal Shukul.
3. M. Amarnath Varma.
4. Mt. Katori.

This mill has been started from 1st December, 1921.

Capital.—Rupees 11,000:

Labour.—Number of hands—8 men work in this mill.

System of payment.—Three men get monthly pay and five get daily wages.

1. Engine Driver Rs. 35 per mensem with food.
2. One clerk on Rs. 10 per mensem.
3. One coolie on Rs. 5 ,,
4. Five labourers on daily wages at the rate of 6 annas per head.

One disintegrator for crushing the tobacco stalk is being set up in this mill. In connection with this one carpenter is also working who gets Re. 1 daily.

Outturn in 2 months since the mill has been started—

In December 53 maunds.

In January 100 ,,

Marketing system.—No advertisement system or trade agents employed. All local consumption. Grinding charges for wheat 8 annas per maund. Grinding charges for gram 4 annas per maund.

What mechanical appliances are used.—One Blackstone oil-engine with H. P. 18, purchased from Marshall and Sons, Bombay, for Rs. 6,000. Tanks, etc., purchased from Cawnpore for Rs. 3,000. The value of the disintegrator is Rs. 900.

Profits.—The forecast of probable profits (annual) by the sharers is 6 to 7 per cent.

(3) Oils.

SANDALWOOD OIL.

(a) General.

1. Import within the 220 tons of sandalwood district. approximately. In the absence of facilities mentioned in the report these figures cannot be given accurately.
2. Export from the district. Ditto.
3. *Manufacture.*—There are only two big factories :—(a) Mathura Pershad Suraj Pershad, (b) Messrs. Sorabji Rewa Shanker. Both these are described in detail. Details of smaller factories are given in the descriptive part.

4. Prices of Itrs are per tola as follows :—

Rose	...	...	Re. 0-14-0, Re. 1, Re. 1-8-0, from Rs. 2 to Rs. 10, Rs. 12 to Rs. 15.
Keora	...	...	Re. 0-14-0, Re. 1, Rs. 1-8-0, from Rs. 2 to Rs. 7 and Rs. 10.
Hina	...	...	Ditto.
Motia	...	...	Ditto.
Khas	...	...	Re. 0-14-0 to Rs. 5 and Rs. 7.
Panri	...	...	Ditto.
Champa	...	...	Re. 0-14-0, Re. 1, Rs. 1-8-0, Rs. 2, Rs. 3 and Rs. 5.
Molsari	...	...	Ditto.
Shah Naz	...	...	Re. 0-14-0, Re. 1 to Rs. 7 and Rs. 10.
Ruh Afza	...	...	Ditto.
Shimam-tul-ambar	...	...	Ditto.
Chameli	...	...	Ditto.
Harsinghar	...	...	Re. 1, Rs. 1-8-0, Rs. 2 to Rs. 5, and others.

5. *Wages*.—They range from Rs. 12 to Rs. 100. Mistry gets Rs. 100.

6. *Seasons*.—Sandal oil is extracted all the year round. The seasons for the Itrs are as follows :—

Rose	...	...	March.
Bela	...	...	May and June.
Chameli	...	...	August and December.
Genda	...	...	January and February.
Keora	...	...	May.
Hina	...	...	All the year round.
Panri	...	...	Ditto.

(b) *Mathura Pershad Suraj Pershad's Sandalwood oil Factory.*

1. *District*.—Farrukhabad (Kanauj).
2. *Industry*.—Sandalwood oil.
3. *Raw materials*.—

Import.

- (a) *Quantity*.—220 tons or 5,400 maunds nearly.
- (b) *Place of origin*.—Madras Presidency (Coorg and Coimbatore).
- (c) *Value*.—Rupees 3,20,000.

Export.

- (a) *Quantity*.—16,667 lbs. or 203 maunds nearly.
 (b) *Place of consignment*.—One-third local and two-thirds to London, Japan, America and Java.
 (c) *Value*.—Rupees 3,00,000.

Local use.—One-third equals 8,333 lbs. or 132 maunds nearly, worth Rs. 1½ lacs.

4. *Manufacture*—

- (1) *Cottage Industry*.—Nil.
 (2) *Small Factory*.—Nil.
 (3) *Big Factory Power Mill*—
 (a) *Place of location*.—Makrandnagar (Kanauj).

(b) *Labour*—

- (i) *Number of hands*—75.
 (ii) *Wages and system of payment*.—Labour is paid by time and wages range from Rs. 12 to Rs. 100 monthly. Total monthly expenditure in wages comes to Rs. 1,000.

(c) *Annual outturn in weight or price*.—25,000 lbs. or 302 maunds, valued at Rs. 4,50,000.

(d) *H. P. of engine*—16.

H. P. of boiler—40.

Working pressure of boiler—150 lbs.

5. *Advertisement*.—No orders are supplied direct or through agents.

6. *Prices of raw material and finished products*.—Sandalwood Rs. 1,600 per ton and oil Rs. 45 per seer.

7. *Seasons*.—All the year round.

(c) *L. Debi Pershad Sunder Lal's Factory for manufacture of Itrs.*

1. *District*.—Farrukhabad (Kanauj).
 2. *Industry*.—Itr (scent).
 3. *Raw materials*—

Import.

(a) *Quantity*.—Tilli for oil, 1,000 maunds a year.

(b) *Place of origin*.—Cawnpore, Banda, Kanauj and Chandausi.

- (c) *Value*.—Rupees 10,000.
 (d) *Quantity*.—70 maunds and 300 maunds flowers.
 (e) *Place of origin*.—Madras, Mysore and local.
 (f) *Value*.—Rupees 1,40,000, Rs. 7,800 (average).

Export.

- (a) *Quantity*.—375 maunds of oil and 70 maunds Itr.
 (b) *Place of consignment*.—All over India.

4. *Manufacture*—

- (a) *Place of location*.—Kanauj City.

(b) *Labour*—

- (1) *Number of hands*.—60 workmen.
 (2) *Wages and system of payment*.—Monthly at Rs. 10 to Rs. 80.

- (c) *Annual outturn in weight or price*.—70 maunds Itr.

- (d) *Material used, imported or local*.—Sandal oil, tilli and flowers; out of these oil and flowers purchased locally and tilli purchased locally as well as imported.

5. *Advertisement*.—Travelling agents employed and no advertisements in papers.

6. *Price of raw material and finished products*—

- (1) Sandalwood Rs. 1,600 per ton.
 (2) Tilli Rs. 12 a maund.
 (3) Flowers Rs. 30, Rs. 22 and Rs. 15.
 (4) Phials Rs. 3 and Rs. 3-8-0 per gross.
 (5) Sandal oil Rs. 45 a seer.

(4) Saltpetre.(a) *General.*

Import of crude saltpetre in the district.—One lac to one lac thirty thousand maunds.

Export from the district of refined saltpetre.—Fifty to sixty thousand maunds.

The industry is carried on small factory system.

Price of crude saltpetre.—Rupees 4 to Rs. 6 per maund.

Price of refined saltpetre.—Rupees 10 per maund.

Wages.—Rupees 11 to Rs. 12 per mensem are given to a labourer in this industry.

Seasons.—The work of scraping is done for 8 months in a year. June to September is dull. Refining goes on all the year round.

(b) *L. Behari Lal Saltpetre Refinery.*

1. *District.*—Farrukhabad.
2. *Industry.*—Saltpetre.
3. *Raw materials*—

*Import.**Crude saltpetre*—

- (a) *Quantity.*—7,500 maunds.
- (b) *Place of origin.*—Mainpuri, Etah, Etawah, Hardc Shahjahanpur, Hisar, Punjab, Aligarh, Budaul Cawnpore and Agra.
- (c) *Value.*—Rupees 30,000.

Export.

- (a) *Quantity* —3,750 maunds refined saltpetre.
- (b) *Place of consignment.*—Calcutta.
- (c) *Value.*— Rupees 35,580.

Local use.—Local consumption is negligible. The local use is confined only to pyrotechnic purposes; one day's production, say, about 9 maunds.

4. *Manufacture.*—The refining of saltpetre is carried on in this district on a small factory basis.

- (a) *Working capital.*—Rupees 20,000.
- (b) *Labour*—
 - (1) *Number of persons employed* —15.
 - (2) *Wages system of payment.*—Monthly system at Rs. 11 per mensem.
- (c) *Outturn in weight or price* —3,750 maunds at Rs. 37,500.
- (d) *Mechanical appliances.*—Nil.

5. No advertisement system.

(5) Textiles.(1) **TENT MAKING.**(a) *General.***Raw material used**—

- | | |
|--------------|----------------------------------|
| (1) Cloth. | (5) Sal, Sakhu and bamboo poles. |
| (2) Iron. | (6) Leather. |
| (3) Eyelets. | (7) Rope. |
| (4) Niwar. | (8) Tape. |

Import.—Roughly about Rs. 30,000.

Export.—Rupees 30,000 to Rs. 40,000.

Manufacture.—The work is carried on small factory system and all factories are run on similar lines.

Seasons.—Work mostly done in winter; in summer the business is dull.

(b) *The Tent-Supply Co., Fatehgarh.*

1. *District.*—Farrukhabad.

2. *Industry.*—Tent.

3. *Raw materials*—

Cloth.

Poles.

Bamboo.

Iron and leather eyelets.

Rope.

Niwar.

Tape.

Import.

(a) *Place of origin.*—Local, Cawnpore and Ahmedabad.

(b) *Value.*—Rupees 18,000.

Export.

(a) *Place of consignment.*—Native States.

(b) *Value.*—Rupees 30,000.

4. *Manufacture*—

(a) *Working capital.*—Rupees 25,000.

(b) *Labour.*—On an average 25 men in winter, 5 men in summer.

(c) *Outturn in price.*—Rupees 30,000.

5. *Season when particular work is done.*—The work is in full swing in winter, but dull in summer.

(2) CALICO PRINTING.

(a) *General.*

Raw materials used—

(1) Cloth.

(2) Dyes.

(3) Blocks.

Import and export.—Exact figures could not be ascertained, but the total extent of the business is about 10 lacs or so.

Manufacture.—The industry is carried on the factory system. Four firms use steam power for making colours fast.

Seasons.—The work is done all the year round.

(b) *Fabric Printing firm of Kunji Lal Sadh & Sons.*

1. *District.*—Farrukhabad.
2. *Industry.*—Fabric printing.
3. *Raw materials*—

Import.

(i) *Quantity*—

	Rs.
Cloth	60,000
Dyes	2,000
Blocks	1,000
Gums . . . . .	...
Chemicals . . . . .	...

(ii) *Place of origin*—

Cloth.—Manchester, Japan, Calcutta and Bombay.

Dyes.—Bombay (English and German).

Vegetable dyes.—Local.

Value.—Rupees 63,000.

Export.

(i) *Quantity.*—Ten to 12 thousand curtains, etc.

(ii) *Place of consignment.*—London (by post).

(iii) *Value.*—Rupees 76,000.

4. *Manufacture*—

(a) *Working capital.*—Rupees 20,000.

(b) *Labour*—

(1) *Number of hands*—

Printers	18
Colour makers	3
Calenderer	1
Oiler	1
Dhobis	2
Mistris	2

(2) *Wages and system of payment.*—Contract system mostly. Daily outturn of a printer is 2 pieces on an average.

	Rs.	a.	p.	
1. Prints	...	1	0	0 for 2 pieces 9' x 6'
2. Colour maker	...	15	0	0 per mensem.
3. Washerman	...	0	10	0 a day.
4. Calenderer	...	0	0	3 per piece.
5. Oiler	...	0	0	1 „
6. Mistry	...	30	0	0 per mensem.

(c) *Total outturn in weight or price.*—Rupees 76,000.

(d) *Appliances used.*—Steam cottage 10 lbs. pressure. Boiler 10. H. P.

(e) *Seasons.*—All the year round, but the work is dull in the rains.

Railway freights of chief commodities of the district to or from the chief places of export or import :—

Commodity.	Place of import or export.	Rly. freight.				
		Rs.	a.	p.		
Saltpetre, refined	... Calcutta	...	1	9	9	
	Do., crude	... Cawnpore	...	0	3	11
		... Agra	...	0	7	2
		... Hardoi	...	0	7	10
		... Aligarh	...	0	5	9
		... Etah	...	0	3	6
		... Shahjahanpur	...	0	8	5
		... Budaun	...	0	5	3
		... Bombay	...	1	10	3
		... Bhaonagar	...	1	2	9
		... Botat	...	1	0	9
... Rampur	...	1	0	3		
... Tajkot	...	1	1	9		
Brass and copper sheets...	... Calcutta	...	2	5	3	
	... Bombay	...	1	10	6	
Brass wares...	... Karachi	...	1	10	6	
	... Calcutta	...	3	14	5	
	... Lucknow	...	0	6	6	
	... Ramnagar	...	0	10	10	
	... Kashipur	...	0	9	10	
... Bareilly	...	0	6	11		

Commodity.	Place of import or export.	Bly. freight.		
		Bs.	p.	
Brass wares—(concl'd.) ...	Chandausi ...	0 9	9	
	Najibabad ...	0 14	0	
	Cawnpore ...	0 5	5	
	Hathras ...	0 5	0	
	Dehra Dun ...	1 5	9	
	Haldwani ...	0 11	11	
	Saharanpur ...	1 1	7	
	Hapur ...	0 15	0	
	Nagina ...	0 14	1	
	Sitapur ...	0 9	5	
	Moradabad ...	0 10	0	
	Potato ...	Bombay ...	0 14	5
		Nagore ...	0 13	1
Udeypur ...		1 0	4	
Ajmere ...		0 10	7	
Agra ...		0 7	2	
Khandwa ...		0 14	5	
Indore ...		0 13	2	
Jeypore ...		0 8	3	
Jodhpur ...		0 13	11	
Bikaner ...		0 15	1	
Botat ...		1 2	9	
Rampur ...		1 0	9	
Rajkot ...		1 0	3	
Delhi ...		0 8	1	
Rawalpindi ...		1 5	5	
Lahore ...		1 2	8	
Tobacco ...		Bikaner ...	1 10	4
	Sujangarh ...	1 6	8	
	Ratangarh ...	1 7	2	
	Suratgarh ...	1 9	7	
	Sirsa ...	1 9	8	
	Bareilly ...	0 8	6	
	Bhattu (near Ajmere) ...	1 6	6	

CHAPTER IV.

DIRECTORY.

1. List of Banks.

Co-operative bank.

2. List of Industrial Schools.

- (a) Ram Sahai Siksha Bhawan.
 (b) Fatehgarh Mission Industrial School.

3. List of brass dealers in Farrukhabad district.

Name.	Address.
1. Mukand Ram Shyam Sunder ...	Farrukhabad.
2. Misri Lal Kunj Bihari ...	Ditto.
3. Bhagwandas Mangal Sen ...	Ditto.
4. Munna Lal Mathura Pershad ...	Ditto.
5. Salig Ram Parshotam Narain ...	Ditto.
6. Sheocharan Das Ganga Prasad ...	Ditto.
7. Ramcharan Banwarilal ...	Ditto.
8. Mathura Pershad Piyare Lal ...	Ditto.
9. Nand Ram Hira Lal ...	Ditto.
10. Kashi Ram Bhagan Lal ...	Ditto.
11. Sheonarain Dharam Narain ...	Ditto.
12. Ram Narain Harcharan Das ...	Ditto.
13. Jadu Rai Hazari Mal ...	Ditto.
14. Mukand Ram Ram Charan ...	Ditto.
15. Babu Ram Naraindas ...	Ditto.
16. Tulshi Ram Sheocharan Lal ...	Ditto.
17. Ueychand Munna Lal ...	Ditto.
18. Shankarlal Govardhan Das ...	Ditto.
19. Puran Lal Puttu Lal ...	Ditto.
20. Janki Pershad Kali Charan ...	Ditto.
21. Ganga Ram Shiva Dayal ...	Ditto.

N.B.—All these are wholesale dealers.

	Name.	Address.
22.	Dwarkadas Naraindas	... Farrukhabad.
23.	Asharfi Lal ...	... Ditto.
24.	Shyam Lal ...	... Ditto.
25.	Kalyan ...	... Ditto.
26.	Bhola Nath ...	... Ditto.
27.	Bindraban ...	... Ditto.
28.	Chotte Lal ...	... Ditto.
29.	Nanhe Lal ...	... Ditto.
30.	Janki Bhatia ...	... Ditto.
31.	Murlidhar ...	... Ditto.
32.	Balkishan ...	... Ditto.
33.	Janki Chaudhari ...	... Ditto.

N.B.—All these are retail vendors.

4. List of the Calico Printing firms.

1. Sumerchand Sindur Chand.
2. Shyam Lal Chunna Lal.
3. Kunj Lal Sadh and Sons.
4. Kunji Lal Brakhbhan.
5. Nanhelal Raj Narain.
6. Sheonarain Anokhelal.
7. Ramanand Chunnalal.
8. Lareti Lal Sunder Lal.
9. Ranjit Singh Mathura Das.
10. Sheonarain Jainarain.
11. Khunilal Bhup Narain.
12. Baji Lal Jaswant Rai.
13. Lakhpat Rai Shyam Lal.
14. Jugal Kishore Achambhe Lal.
15. Chhiman Lal Nihal Rai.
16. Mangli Ram.
17. Shilchand Ahharan Das.
18. Gopichand Prahlad.
19. Rajnarain.
20. Pirthi Singh Nihalchand.
21. Chunna Lal Gulzari Lal.
22. Chandra Sen Partab Sen.
23. Gopi Chand Lakhmi Chand.
24. Beni Ram Achambhe Lal.
25. Bansidhar Chunna Lal.
26. Bansidhar Lareti Lal.

27. Kunji Lal Lakhmi Chand.
28. Het Ram Gulab Singh.
29. Saligram Khumiau Lal.
30. Lareti Lal Sunder Narain.
31. Nihal Chand Bhup Narain.

5. List of important Perfumery firms of Kanauj.

1. Makhan Lal Chainsukhdas.
2. Makku Lal Ajodhya Prasad.
3. L. Benarsi Das.
4. Sita Ram Ajodhya Prasad.
5. Mustafa Khan.
6. Debi Prasad Sunder Lal.
7. Mannu Lal Ram Narain.
8. Pragdutt Sunder Lal.
9. Beni Ram Mool Chand.
10. Mathura Prasad Suraj Prasad.
11. Bhagu Khan.
12. Rameshwar Ram Sanahey.
13. Moona Lal Chanderbali.
14. Murlidhar Bansidhar.
15. Debi Prasad Shamlal.
16. Gauri Shanker Ram Narain.
17. Narain Das Debi Prasad.
18. Tulsiram Sidhnath.
19. Methulal-Mangali Prasad.
20. Ram Prasad Narain Das.
21. Babu Lal Sharma.
22. Rajdutt and Co.
23. B. D. New Factory.
24. Badri Prasad Parukhnath.
25. Hardevi Lal Budhsen.
26. Muhammad Ayub Muhammad Iashias.
27. Salamtullah Muhammad Usuf.
28. Farzandali Barakatali.
29. Shamimhind.
30. Dr. Noormohammad Yaqubali.
31. Abdula Khan.
32. Haji Muhammad Mukhi.
33. Chedi Ram Moolchand.
34. Kanauji Lal Asharfilal,

35. Brijbeharilal Kunjbeharilal.
36. Din Dayal Bishesharnath.
37. Khubchand Bhajanlal.
38. Choteylal Baburam.
39. Ishwari Prasad Chandiprasad.
40. Banwarilal Balram.
41. Ahmedahusain Dinmohammed.
42. Radhakishen Kunjbehari.
43. Durga Prasad Tilokchand.
44. Gangasagar Amarnath.
45. Baijnath Badrinath.
46. Bansidhar Deokinandan.
47. Rajaram Misra.
48. Indernarain, Zamindar.

6. List of saltpetre refiners.

Serial no.	Name.	No. of vats used.		Monthly output
		Pans.		Maunds.
1	Kunjilal Birakhbhan ...	6		550
2	Thakurdas Makhan Lal	3		450
3	Kalyan Mal Misri Lal ...	5		600
4	Perumal Shyam Lal ..	2		300
5	Bihari Lal Madan Lal ...	3		360
6	Gopalji Gangji	2		300
7	Mannilal Perumal ...	4		600
8	Debi Das Naraindas ...	4		600
9	Badridas Gopinath ...	8		720
10	Bhola Nath Shanker Lal	4		480
11	Brijmohanlal Parmoda Charan.	Closed.		
12	Sumerchand Sindur Chand.	6		840
13	Khunni Lal Kanhaya Lal	3		360

N.B.—Some of these kothis have got branches making a total of 16 refineries.

7. List of Tent Factories.

1. Gulzar Ahmad's, Fatehgarh.
2. Muhammad Hasan's, Fatehgarh.
3. Messrs. Chunnilal Ajodhiya Prasad's, Fatehgarh.

CHAPTER V.

Note on printing by MR. H. B. SHROFF, Principal of the Dyeing and Printing School, Cawnpore.

Lines of work in printing.—Farrukhabad is a city situated on the bank of the Ganges along the railway line (metre gauge) running from Agra to Lucknow as well as served by the East Indian Railway (broad gauge); its population is about 50,000 and is three miles from the cantonment of Fatehgarh. The printing industry there is old and well established and business in it runs into over Rs. 30,00,000 annually. It is unique that cloth of foreign make, mostly English and now also Japanese, is imported, and the same after printing is exported to various parts of Europe and America. Some work is also carried out on mill made khaddar and twill of Indian manufacture specially for the production of chhintz. The main work is, however, carried out on longcloth and the type of work varies from bed covers, curtains, cushion covers, table cloths, furds (razais used for wrapping during the day in the winter seasons), and lihafs (razais for covering during the night). Some work in form of curtains, etc., is also carried out on silk cloths imported from Azamgarh.

Export trade and Sadh community.

The fame of Farrukhabad in printing is world-wide and most of the work, such as of curtains, bed covers and cushion and table cloths, is exported, whereas of furds and lihafs is mostly consumed in India. The export industry is a prosperous one and is centred practically in the hands of three firms belonging originally to one and the same family. The whole of the printing trade is with the Sadh community, though the printers (Karigars) are drawn from the various Hindu and Muhammadan communities. It is said that nearly two-fifths of the printers are Muhammadans. The Sadhs are a sect of Hindus; they believe in one God, are not idolators and do not bow to anybody, but raise their hands in front of them indicating blessings and meaning that all is well. The

exporting firms are enterprising and fairly progressive both in technical and commercial matters. They go very often to foreign countries in connection with their business and exhibit their goods at the various exhibitions in England and France. But when abroad they pay very little attention to the technical side of their trade, and in consequence the technique of their art of printing shows not very satisfactory improvement. They are much behind the times, and specially in the mixing of colours, making up of the pastes, preparation of many chemicals and mordants as well as in the subsequent processes of printing there is much room for progress. The old art of printing with vegetable colours has practically disappeared and aniline colours—practically direct, basic and mordant colours—have now taken their place.

The condition of trade.

The export trade before the war was very prosperous, but had practically ceased during the war, there being no demand as all the importing countries were otherwise busy. It is again regaining its past position, and I am told that they cannot cope with the work due in some cases to shortage of capital, but chiefly to want of printers in sufficient numbers. In Farrukhabad there are just about a thousand printers in all, out of which not more than one-fifth would be engaged on export work. Out of these over one hundred are engaged with the three exporting firms in printing "fast colours," mainly alizarine colours, knowledge of application of which is restricted to them. They also carry out the "cheap" curtains work for which they use mostly bright basic colours along with direct cotton colours. For this class of work they also give contracts to other smaller firms and export it after collection. The export trade is able to hold its position successfully because the nature of work is such that it cannot be handled by any other method of printing except by blocks. This means all manual labour which is comparatively much cheaper. The printers get Rs. 12 per month for one "lehagi," a contract consisting of printing four pieces each of 3' x 2' per day in one colour, generally black, which being the outline colour is taken as a standard; the number of pieces in a "lihagi" will vary according to the amount of printing in other colours on the basis of this standard. A printer can

carry out normally three "lehagis" in a day and he is thus able to earn about Rs. 36 per month. A good and fast worker is, however, able to earn as much as Rs. 50—60 a month. The present wages are nearly three times the pre-war rates. The printers are, however, in debt, got as advance from their employers.

Designing and block cutting.

Designs for export work are mostly supplied by the foreign merchants and blocks are cut according to these designs. Some of the progressive firms also submit designs carried out according to their ideas for approval of the importing merchants. The colour schemes are also carried out in mutual consultation. The firms also make collection of the old and antique samples during their tours and get them copied out. Many designs of Persian origin are also copied. The art of designing, however, may be said to be stagnant and needs much help.

The block cutting is carried out mostly in Farrukhabad and Kanauj. But cutting of very fine and delicate patterns has got to be done from Patiala. The wood used is mainly "Sisum" which is both cheap and very satisfactory.

It costs about Rs. 4 per cubic foot. The size of the blocks varies very much and a block is usually made in one piece from well seasoned wood, though sometimes wood of lighter varieties for heavy blocks is used in part for the handle which is nailed and glued down. The engraving surface of the wood is planed to a dead level and is then besmeared with a very thin layer of "pili matti." The designs are copied on tracing papers and from these transferred on to the prepared surface of wood by a sharp instrument which leaves the outline visible, and is then engraved in relief. A separate block for each colour is required, and is similarly engraved. Many printed samples were examined and the following points require careful attention in order to improve the prints. In printing solid masses, the edges were often clumsy and irregular and the colour had many blotches, due mainly to the inability of the solid surfaces of the blocks to uniformly distribute the colour. Such is always the case when simple wooden blocks are employed. Introduction of the coppered blocks in which metal strips are used to build up the outline of the pattern

accompanied with filling up of spaces with felt in case of printing of solid masses will overcome both these defects. The metal strips will give very sharp outline, fineness of which is not possible in case of ordinary wooden blocks due to their liability to break away while engraving and printing. The felt being more absorbent than wood takes up colour uniformly and hence blotches due to uneven distribution of colours will be removed.

In case of veining of leaves as well as of spot patterns and such other light work requiring fineness and sharpness the introduction of "coppered" blocks will no doubt be advantageous in place of wooden blocks in use at present. The wooden blocks wear away and as the parts engraved in relief increase in width as they recede from the surface, the sharpness as well as fineness of the designs disappear. The improvement suggested is likely to overcome these defects. All the printing is done by means of blocks and no devices of any kind to reduce the manual labour are noticed. The introduction of printing by the help of stencils, the "toby" printing which allows printing of more than one colour by special arrangement of the sieve and blocks, and the Perrotine printing or block printing by machine are some of the lines which, if introduced, will lead to saving in labour. In printing very heavy, solid masses of a colour showing as ground colour, two methods are in use, by blocks (Datta) or by pota, i.e., by a pad formed of cloth and used as a brush, the previously printed portions being protected by printing over them with a mechanical resist made of lime or clay and gum, the "pota" being used to fill up the remaining portions with the ground colour. The edges of the prints are also coloured by use of "pota." In both these cases use of stencils will be an advantage, and will lead to uniform work.

The colour sieve and the printing table.

Besides the blocks two other requisites, viz., the colour sieve and a printing table, are required. The block picks up colour from the colour sieve when pressed against it, and the colour is then transferred on to the cloth which has to be spread on a heavy table. The colour sieve consists of three parts:—(1) A colour tub of wood about 1' 6" × 1' 0" × 3" deep. (2) A sieve proper made up of thin bamboo strips

supported in the middle and at the edges by three thin pieces of wood. The bamboo strips are tied to one another and to the supports. The sieve rests in the tub on the supports. (3) The colour pad of a fine woollen cloth stretched evenly and kept in position by the sticky colour paste. The printing table is generally of a heavy wooden top about 5' 6" x 1' 6" and 2 to 2½" thick with four short legs arranged in a position slightly slanting towards the printer who works in a sitting posture. The table is covered over with several thicknesses of cloth to form a pad.

Preparation of colours.

The colours mainly in use are mordant and basic colours and sometimes direct cotton colours. The colour paste consists of (1) a thickening, (2) colour and (3) mordant or fixing agents. The thickening is chiefly made from arrowroot flour, though sometimes natural gums such as babul gum (gum arabic) or dhak gum are employed. The only vegetable colours in use are logwood, cutch, Quereitr bark, Persian berry extract and *dnar* or pomegranate bark. The style in use is direct steam style of printing. Many of the chemicals in use are imported, and even such as can easily be prepared are purchased in preference to making them, due chiefly to want of knowledge of preparing them or knowing not necessarily cheap and convenient methods of preparing them. Expensive oils such as olive oils are still used and no attempt is made to make use of cheaper indigenous oils or their preparations. Chromium acetate is made by the double decomposition method from chrome alum and sugar of lead. Some prepare their own turkey red oil. Of course it is very difficult to know the exact processes in use as considerable secrecy is observed; but, I dare say, in many cases there will be much room for improvement. For instance, a case was unknowingly brought to notice in which large amounts of paste of alizarine red were rendered useless, due to keeping; though they generally prepare as much as would be used up in a couple of days. The colour paste is made up by adding together the thickening, colour and the mordant. A simple precaution of postponing the addition of colour to the otherwise prepared paste will stop much of the loss incurred due to absence of knowledge of knowing the why and wherefore of things. The indiscriminate use of thickenings, want of properly adding the necessary ingredients and

such like result in much avoidable loss. The work is carried out on rule of thumb lines and it is difficult to know when things will improve. For the production of many shades they have to depend upon the recipes obtained from colour manufacturers. In many prints as many as twelve to fourteen different colours are used. After printing, the dry river sand is sprinkled over the printed portions, specially during the rainy season. This assists in drying as the sand soaks up the extra moisture.

Steaming.

The steaming of the printed goods is the next operation. Three of the export firms combined themselves and possessed a common steaming plant consisting of a steaming cottage and a boiler. The steaming cottage is a long cylindrical drum with a very heavy and clumsy door. It has a removable carriage inside on rails which can be taken out for charging. The cottage has no arrangement for preventing condensed water drops from falling on to the printed pieces causing marking off with disastrous results. It is unfortunate that due to family quarrels this combined arrangement of working has broken down, and each firm is thinking of putting down a separate plant. The plant as it stands has hardly enough work for full time operation and its duplication or rather triplication is not called for. Besides this common plant for pressure steaming, each firm has a small steaming chamber heated by a *chula* for steaming without pressure. The furnace is not well constructed and the cylinder used requires to be covered up with a non-conducting material to prevent any loss of heat, but what is more necessary to prevent water vapour condensing on top and sides and coming in contact with the printed material. The steaming cylinder is about 2' 6" diameter × 5' high. It has got a perforated grid fixed at about 2' 0" from bottom between which water is placed for evaporating.

Washing operation.

After steaming the goods are sent to the river Ganges for washing. The pieces are washed in open width by tying up two ends of one side of each piece in a stretched condition and the ends have two pieces of stones to keep it weighted as well as to prevent curling up and then the whole piece floats in an open width along the current of the stream. All the gum is

thus washed and removed away and as the water is plentiful and constantly running, all excess of unfixed colour is removed without causing any staining of the white ground. This operation is known as "pachhoda." Washing takes about 2—3 hours this way.

The washed pieces are then spread over the dry sand on the bank of the river and all excess of moisture is sucked up by the porous sand. The sun dries them. Where white is stained and requires clearing, the printed pieces are kept moist by constant sprinkling of water and are in this condition exposed to the sun for several days. Exposure of about 6—8 days is generally sufficient. The dried pieces are subjected to "kundi," an operation consisting of folding and then beating by wooden mallets so as to make the folds preserve their form. The cloth is sometimes slightly moistened when it does not contain the required amount of moisture for the purpose of "kundi".

The dhobi who does all this work earns about Re. 1 a day and is able to finish usually forty pieces. The work is much delayed in the rainy season.

After washing and clearing, the pieces are in some cases tinted. For this purpose generally the direct colours are employed to give a very light shade. Tinting is, of course, carried out before "kundi".

Lines of development.

No finishing operation is carried out on the prints, and I was informed that the printed pieces are often not sold as such by the importing firms, but are finished and calendered and sold at much better prices.

Now this is an operation that naturally ought to be carried out by Farrukhabad printers. But this is hardly possible looking to the individual nature of the various business firms, and only a co-operative effort of the various printing interests can handle the work economically and successfully.

Sufficient scope already exists for bleaching of cloth to be carried out in Farrukhabad on the same basis, as printing is practically carried out on imported bleached material.

The bleached cloth as used now certainly contains the finishing ingredients and is generally bleached by what is known as "market bleach". It is therefore liable to contain

many substances, existence of which is to be avoided. The starches, oils and mineral substances (chiefly calcium salts liable to be present, due to the method in use for "market bleach") are liable to cause fixation of the colour where not wanted and also interfere with the correct formation and proper fixation of the colours.

The bleaching, if carried out locally, can be so arranged as to avoid the introduction of these impurities and the cloth can only be finished suitably only after printing. As at present, the printers have only to be satisfied with purchasing of cloth containing as small an amount of finishing materials as possible.

In India, to the best of my knowledge, there are only a couple of mills carrying out printing by machine. Millions of yards of printed cloth such as shirting, chhintz, sarees are imported every year for the market. Only recently a representative of the Calico Printers' Association was sent out to investigate if they would be justified in starting a print works in India itself instead of exporting from England. His advice has not been favourable at present for the idea, but there is no reason to think that they may not take up the idea again at a later date. In Farrukhabad they do produce some chhintz of a not very superior quality and at the same time not cheap; it is sold at Re. 1-4-0 a yard. A factory doing printing by machine and producing cheap chhintz of very simple and possibly of a few stereotyped designs will have indeed a good field. The situation of Farrukhabad is quite suitable and with its already established fame in printing, if this new line of activity is started, there is no reason to be pessimistic about its success, provided the factory be run efficiently on approved lines. The same factory can also handle the bleaching of cloth required for the existing printing trade and also their steaming, washing and finishing subsequent to printing. Such a factory conceived to meet the requirements of the existing printing trade and doing also the new line of work indicated above should prove to be a line of natural development.

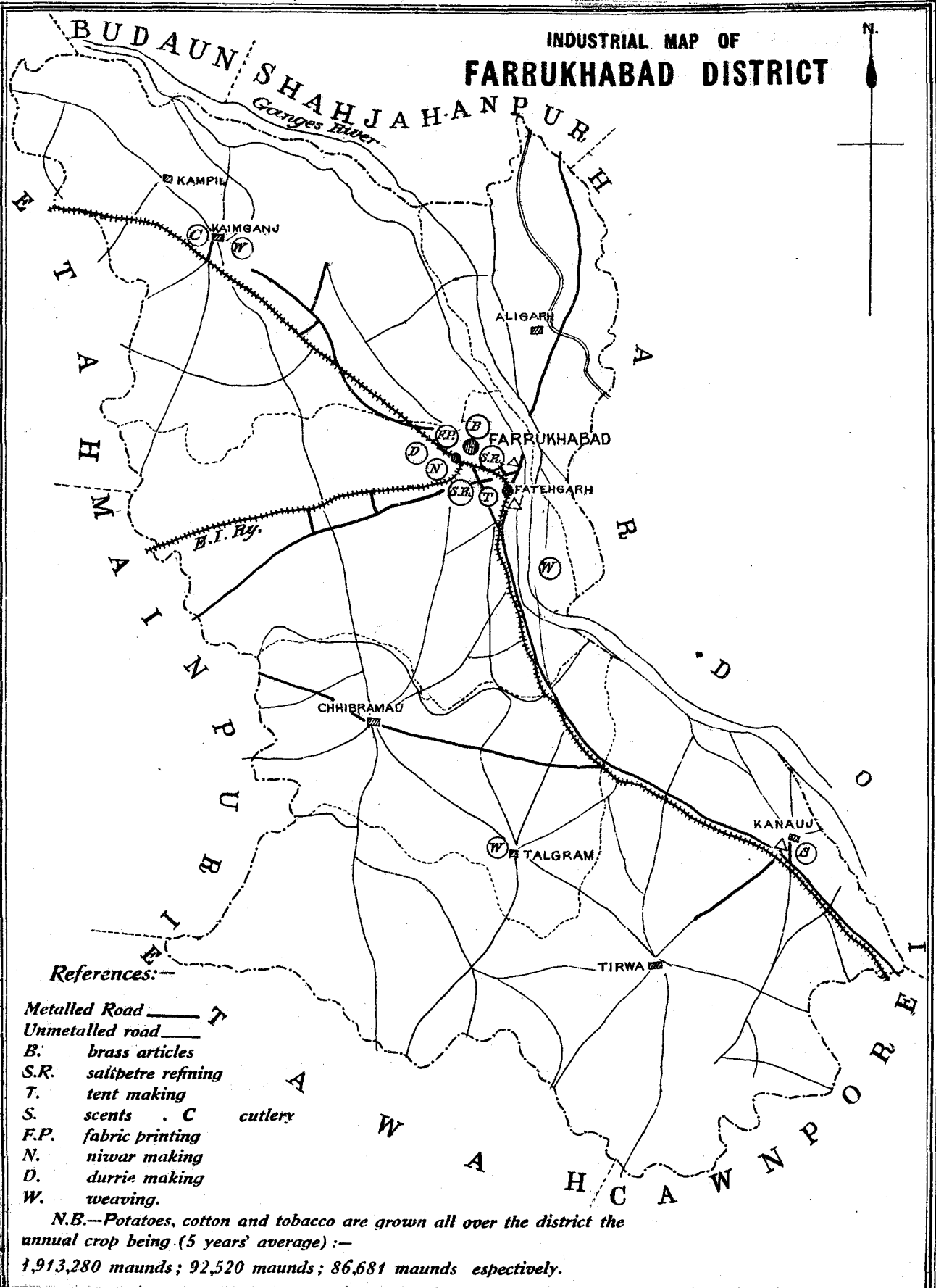
The present printing trade has no knowledge of the application of many alizarine colours (with the exception of the exporting firms) and also of extremely fast and very brilliant vat dyes now available in the market. The Government opened a school of printing temporarily for assisting the printing trade. The only work taught there was the mechanical application of

the blocks, but the more important and comparatively useful work of imparting the knowledge of making colour pastes, application of select colours, and their treatments necessary after printing was completely omitted. A school run on these lines will really serve the useful purpose of encouraging the existing trade.

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INDUSTRIAL MAP OF FARRUKHABAD DISTRICT



References:—

- Metalled Road ————
- Unmetalled road ————
- B. brass articles
- S.R. saltpetre refining
- T. tent making
- S. scents . C cutlery
- F.P. fabric printing
- N. niwar making
- D. durrie making
- W. weaving.

*N.B.—Potatoes, cotton and tobacco are grown all over the district the annual crop being (5 years' average) :—
1,913,280 maunds; 92,520 maunds; 86,681 maunds respectively.*

Report on the
INDUSTRIAL SURVEY
of the United Provinces

Fatehpur District

By
JAGDISH SAHAY VATAL, B.A.



ALLAHABAD :

Printed by the Superintendent, Government Press, U. P.

1923

1

CONTENTS.

	PAGES.
FOREWORD	i—ii
CHAPTER I—	
1. General features of the district	1
2. Rivers	<i>ib.</i>
3. Jheels	<i>ib.</i>
4. Jungles	<i>ib.</i>
5. Ferries	1-2
6. Roads	2—4
7. Canals	4
8. Railways	<i>ib.</i>
9. Markets	5-6
10. Fairs	6-7
11. Population	7
12. Cattle census	<i>ib.</i>
CHAPTER II—	
1. Building materials	8-9
2. Chemicals	9
3. Food grains	9—11
4. Glass bangles	12
5. Hardware	12—14
6. Leather	14—17
7. Miscellaneous—	
(i) Basket making	17
(ii) Cattle trade... ..	17-18
(iii) Ganjifa	18
(iv) Jail industries	19-20
(v) Tat-patti weaving	20
(vi) Whips	20-22
8. Oils	22-23
9. Textiles	23—26
10. Utilization of slaughter-house bye-products...	26-27

Mr. S. T. Gadre, Industrial Chemist to Government, has greatly improved the report, and my thanks are due to him. The thanks of the department are also due to the following gentlemen who have helped the superintendent in his survey work :—

1. Rai Bahadur Ishwar Sahai, Rais.
2. Mr. Bishun Man Singh, Rais.
3. Mr. Kailas Nath Muttoo, Naib-Tahsildar.
4. Babu Badri Prasad, Honorary Magistrate and Rais.
5. Babu Jagdamba Prasad, Deputy Collector.
6. Babu Madho Swarup, Tahsildar.
7. Pandit Krishna Kumar Tiwari, Rais, grain dealer and
Honorary Magistrate.
8. Babu Krishna Bihari Lal, Naib-Tahsildar.
9. Babu Jagdish Narain Saingal, Deputy Collector.

CHAMPA RAM-MISRA.

The 8th March, 1923.

CHAPTER I.

INTRODUCTION.

1. General features of the district.

(a) *Boundaries*—

North.—The Ganges.

South.—The Jumna.

East.—Allahabad district.

West.—Cawnpore district.

(b) *General features.*—The level of the land just adjacent to the two principal rivers is high and sloping towards the middle. The tract just close to the Jumna is like a ravine.

The natural drainage of the district requires much improvement, and since very little has been done in this direction, the loss generally caused by floods and water-logging is excessive.

2.—Rivers.

The Ganges and the Jumna with their numerous affluents.

3.—Jheels.

There are a number of jheels in the district—the biggest at Moraon covers an area of 740 acres. With the exception of Moraon and Pharsi lakes, others generally dry up during the hot weather, but in the rains they join with one another and form continuous streams running either towards the Jumna or the Ganges.

4.—Jungles.

There are no jungles in the district except a few patches containing babul, dhak and riong trees.

5.—Ferries.

Tahsil.	Name of river.	Name of ghat.
Khaga	... Ganges	... Ajura.
	Do.	... Naubasta.

Tahsil.	Name of river.	Name of ghat.	
Khaga—(contd.)	Ganges	...	Paharpur.
	Do.	...	Samopur.
	Do.	...	Kutla.
	Do.	...	Rasulpur Bhandra.
	Jumna	...	Kishunpur.
	Do.	...	Salempur.
	Do.	...	Dhana Madaen.
	Do.	...	Kot Salempur.
	Do.	...	Gurwal.
	Ghazipur	Do.	...	Lilra.
Do.		...	Ajhi.
Do.		...	Sarkandi.
Do.		...	Oti.
Do.		...	Kundakani
Khajuha	Ganges	...	Sheorajpur
	Do.	...	Gunir
	Do.	...	Lahngi
	Do.	...	Rawatpur
	Jumna	...	Bara
Fatehpur	Do.	...	Bindaur
	Ganges	...	Adampur
	Do.	...	Tarapur Bhithaura
	Do.	...	Asni
	Do.	...	Lakhpur

Never become fordable.

In the month of May become fordable.

6. Roads.

Tahsil.	Metalled roads.	Miles.	Fur.
Khaga	Grand Trunk road	...	55 0
	Khaga-Kishunpur	...	10 0
Ghazipur	Fatehpur-Ghazipur	...	8 0
	Banda-Sagor	...	...
	Bandhwa Bindki	...	...
Khajuha	Bindki-Kalianpur (some metalled and some unmetalled)	...	2 0
	Khajuha-Mauhar (some metalled and some unmetalled)	...	5 0

FATEHPUR DISTRICT.

3

Tahsil.	Metalled roads.	Miles. Fur.	
Khajuha—(contd.)	Fatehpur-Jahanabad	28 0	
	Kunwarpur-Molwan ... ..	...
	Chillatara-Sheorajpur ... ..	...
	Bakewar-Sheorajpur ... ..	...
Fatehpur ...	Fatehpur-Dalmau	15 0	
	Calcutta-Delhi ... ..	...
	Bahrampur-Jhariaon ... ..	...
	Fatehpur-Banda ... ..	...
	Fatehpur-Ghazipur	8 0	
	Railway station road	7 6	
	Havelock road ... ..	...
	Nawabagh-Kachehry ... ..	...
	Asti-Kotwali ... ..	...
	Jail-Kachehry ... ..	...
Town-Hall-Kachehry ... ..	...	
Tahsil.	Unmetalled roads.	Miles. Fur.	
Khaga ...	Khaga-Hathgaun	7	
	Gaunti-Husainganj ... ..	...
	Hathgaun-Thariaon	9 0	
	Hathgaun-Bilanda	27 0	
	Khaga-Naubasta	10 0	
	Khaga-Dhampur	19 0	
	Khakreru-Kot	7 0	
	Saruli-Hathgaunghat ... ..	...
Dhata-Manjhanpur	Dhata-Manjhanpur	2 0	
	Dhata-Sarguli ... ..	...
	Ghazipur ...	Ghazipur-Lilra	8 4
		Bahrampur-Asothar	7 0
Sah-Auti		14 0	
Bahua-Dhata		44 0	
Khajuha ...	Malwa-Kutia	5 0	
	Kalianpur-Gunir	3 0	
	Khajuha-Hamirpur	19 0	
	Jahanabad-Amauli ... ..	...
	Kora-Sheorajpur	14 0	
Kora-Karbigwan	7 0		

Tahsil.	Unmetalled roads.	Miles.	Fur.
Khajuha—(contd.)	Bakewar-Musafa ...	6	0
	Khajuha-Jaferganj ...	...	...
	Shahbazpur-Jahanabad ...	...	...
Fatehpur ...	Fatehpur-Bhithaura ...	8	0
	Bhithaura-Hathgaun|... ..	21	0
	Husainganj-Asni ...	4	0
	Fatehpur-Adampur ...	7	0
	Bilanda-Hathgaun ...	27	0
	Hathgaun-Thariaon ...	9	0
	Bahrampur-Naraini ...	7	0
	Bahrampur-Asothar ...	7	0
	Haswa-Dhata ...	...	...
	Fatehpur-Junbia ...	...	...
	Fatehpur-Chakendi ...	6	0
Station road ...	...	...

7.—Canals.

	Length.	Area irrigated.
Lower Ganges Canal.		
(i) Fatehpur branch ...	30 miles	} 53,796 acres.
(ii) Etawah branch, Ghatampur extension ...	...

8.—Railways.

	Length.
East Indian Railway Main Line.	... 44 miles.
Railway stations—	
Khaga.	
Teni.	
Rasulabad.	
Faizullapore.	
Fatehpur.	
Kursati Kalan.	
Malwa.	
Kanspur-Gugauli.	
Bindki Road and Aung.	
N.H.—Khaga and Bindki road are two important trade centres.	

9.—Markets.

Tahsil.	Name of market,	Market days.
Khaga	Khaga	Tuesday and Saturday.
	Airawan	Thursday and Monday.
	Muhammadpur	Friday and Tuesday.
	Gaunti.	
	Mandwa	Monday and Thursday.
	Amaon	Tuesday and Friday.
	Hathgaun	Thursday and Monday.
	Ailai	Tuesday and Saturday.
	Kasimpur	Wednesday and Sunday.
	Chheolaha	Tuesday and Friday.
	Saun	Wednesday and Sunday.
	Kishunpur	Wednesday and Saturday.
	Kanpurwa (hamlet of Khakreru).	Ditto.
	Pauli	Monday and Tuesday.
	Gharwasipur	Tuesday and Friday.
	Dendasai	Thursday and Sunday.
	Dhota	Friday and Monday.
	Tent	Monday and Thursday.
	Khasmao	Tuesday and Friday.
	Shahpur	Ditto.
Ghazipur	Ghazipur	Saturday and Wednesday
	Asothar	Monday and Thursday.
	Babua	Saturday and Wednesday.
	Sah	Monday and Friday.
	Lalauli	Sunday and Thursday.
Khajuha	Bindki	Tuesday and Friday.
	Deori	Sunday and Thursday.
	Sonapur Mazra	Monday and Friday.
	Renan.	
	Malwan	Saturday and Wednesday.
	Okhra (Kunwapur)	Ditto.
	Khajuha	Sunday and Thursday.
	Bhainsauli	Wednesday and Saturday
Sheorajpur	Monday and Thursday.	

Tahsil.	Name of market.	Market days.
Khajuha—(contd.).	Khadra ...	Tuesday and Friday.
	Bakewar ...	Monday and Thursday.
	Jahanabad ...	Wednesday and Saturday.
	Jafarganj ...	Saturday and Wednesday.
	Bardara ...	Monday and Thursday.
Fatehpur ..	Jamrawan ...	Wednesday and Sunday.
	Husainganj ...	Monday and Thursday.
	Chit Isapur ...	Wednesday and Saturday.
	Hasanpur ...	Monday and Thursday.
	Tarapur Bhitaura	Wednesday and Sunday.
	Supa ...	Sunday and Thursday.
	Haswa ...	Monday and Thursday.
	Bahrampur ...	Tuesday and Friday.
	Sarai Mohan Sa-	Wednesday and Saturday.
	lempur alias	
	Naubasta.	
	Naraini ...	Sunday and Wednesday.
	Chakendi ...	Thursday and Sunday.
Fatehpur Khas	Saturday and Tuesday.	
(Baqarganj) Lala		
bazar and Hari-		
harganj).		
Aswar Tarapur ...	Friday and Sunday.	

N.B.—The biggest market for grains is Bindki. It stands on the junction of four metalled roads and is 6 miles from Bindki road railway station. Next in importance are Khaga and Kishanpur where too business is done in grain. In Hariharganj and Baqarganj of Fatehpur City considerable business is done in cattle, hides and bones.

10. — Fairs (attendance above 1,000 visitors).

Tahsil.	Name of place.	Description of fair.
Khaga ...	Khaga ...	Ram Lila.
	Kishunpur ...	Ram Lila.
	Dhota ...	Chandka Sehi.
	Khakreru ...	Anant Chaudas ka dangal.
	Hathgaun ...	Jaggannathan.
	Naubasta ...	Ganga ashnan.
Ghazipur ...	Ghazipur ...	Anant Chaudas.
	Sarki ...	Jageshwar.

Tahsil.	Name of place.	Description of fair.
Ghazipur— (contd.).	Sankha ...	Hatia (Bhadon Badi Satmi)
	Phulwa-mao ...	Rureshwar (Magh Badi Panchmi).
	Sah ...	Mol karindebi (Baisakh Puranmashi).
Khajuha ...	Thawai ...	Mahadeoji (Sheoratri).
	Sheorajpur ...	Kartki ashnan (Kartki Puranmashi).
	Jahanabad ...	Bailbai.
	Juniban ...	Moti Rani Debi (Chait Sudi Ashtmi, Naumi, Dasmi).
Fatehpur ...	Thariaon ...	Debiji.
	Chhichhni ...	Bahkaur Baba.
	Simri ...	Ghazi Mian.
	Haswa ...	Ram Lila.
	Gopalpur ...	Ram Naumi.
	Fatehpur Khas ...	Ram Lila.
	Ditto ...	Kajalia.
Ditto ...	Sitla Debi.	
Ditto ...	Moharrum.	

N.B.—At Sheorajpur on the Ganges large number of pilgrims numbering about twenty thousand assemble every year and a considerable amount of business is done in horses, camels, cattle, cloth and other articles.

11. Population.

In the year 1921 the population of the district was 652,392.

12.—Cattle census (1919-20).

Bulls	...	...	206
Bullocks	...	...	133,951
Cows	...	...	92,484
Calves	..	...	108,453
Male buffaloes	...	...	38,747
Female buffaloes	...	...	63,789
Buffalo calves	...	...	56,558
Sheep	...	...	81,642
Goats	...	...	85,000
Others	...	...	16,175

CHAPTER II.

DESCRIPTION OF AND SUGGESTIONS FOR THE IMPROVEMENT OF
THE VARIOUS DISTRICT INDUSTRIES.

1. Building materials.

(i) Bricks.

Earth is invariably used in building houses in this district—but better class houses are made of bricks. Bricks are made in two varieties. The one is the “gumma” and the other “nautairahi.” Over-burnt bricks, “khanjar,” are generally used in foundations. Moulds are employed in making bricks. Slop moulding and sand moulding are the two methods by which bricks are made. The wages for moulding bricks are paid at the rate of Rs. 2-8-0 to Rs. 3 per thousand and the royalty to the zamindar for the use of land ranges from Rs. 10 to Rs. 20 annually per bigha.

There are about 23 brick-kilns in the district and the annual outturn of each kiln comes to about 3 lakhs bricks. The selling prices of each class of bricks vary from tahsil to tahsil.

The rates for “gumma” and other bricks are as follows:—

Fatehpur tahsil		“gumma,” 1st class,	Rs. 20 per thousand.
		2nd „	„ 15 „ „
		3rd „	„ 12 „ „
		“khanjar”	„ 10 „ „
		“nautairahi”	„ 14 „ „
Khajuha tahsil.	1st class bricks	Rs. 15 to	„ 18 „ „
	2nd „ „	„ 12 „ „	„ 16 „ „
	3rd „ „	„ 8 „ „	„ 10 „ „
	4th „ „ (khanjar)	„ 12 „ „	„ 15 „ „
Khaga tahsil.	1st „ „	„	„ 12 „ „
	2nd „ „	„	„ 8 „ „
	3rd „ „	„	„ 6 „ „
	4th „ „ (khanjar)	„	„ 5 „ „

(ii) Lime.

There are several lime bhattas here. The annual production of lime is estimated to be about 2½ lakhs cubic feet. Its selling price is Rs. 8 per 100 cubic feet.

(iii) Stone and kankar.

No stone is available in this district, but kankar is found in sufficiently large quantity. It is used chiefly in metalling the roads and as concrete in foundations. There are about 14 quarries in the district from which the average annual production is 5 lakhs cubic feet. The bed of kankar is 2' to 3' deep and the thick ness of the bed is 1' to 2'.

(iv) Wood.

Wood of mango, mahua, babul and nim trees is commonly used for ordinary building purposes. Better kind of timber is usually imported from Cawnpore.

2.—Chemicals.*Manufacture of crude saltpetre.*

About 2,000 maunds of crude saltpetre is manufactured in the district. It is all exported to Shahzadpore (in the Allahabad district) and Farrukhabad and Cawnpore for purposes of refining.

Nitrous earth is scraped from old uninhabited sites. The royalty which is paid to a zamindar for the use of the earth ranges from Rs. 25 to Rs. 50 per year. The process of manufacturing crude saltpetre is the same as described in the report of the Industrial Survey of the Farrukhabad district.

The work is done chiefly by Lunias who stop the work for four months in the year, i.e., June to September.

3.—Food grains.*(i) General.*

The chief trade of the district is in grains and oilseeds, Bindki, Khaga and Kishanpur are the chief centres from where

grains to the extent of about 16 lakhs maunds are annually exported. Fatehpur City is a distributing centre for the neighbouring villages. Of the aforesaid 3 mandis, Bindki has the biggest market and its close vicinity to Cawnpore has increased its importance a good deal.

Import.—The districts of Banda and Fatehpur flood these mandis with grains and oilseeds of all descriptions.

Export.—Export is chiefly made to Cawnpore, Calcutta, Bombay, Bengal, Delhi and Jubbulpore and the districts of Agra and Allahabad. Arhar and gram find a very favourable market in Calcutta and bajra in Bombay—consequently these are exported in enormous quantities to these places.

“Dal” splitting is extensively done in this district and “dal” is exported chiefly to Calcutta and *chuni* and *bhusi* are exported to Allahabad, Benares and Calcutta.

Marketing system.—Most of the importers personally visit the important markets and make purchases through the local dealers paying commission at the rate of 8 annas per cent. The Bindki dealers also charge commission (*khunchi*) at the rate of 8 annas per cent. from those who bring their grains for sale in the markets. In Khaga the zamindar sells his right of “baiyai” (weighment) to a contractor who charges 8 annas per cent. commission from the owner of the grain and 12 annas per cent. from the purchaser. The dealer gets 8 annas per cent. as his commission. Some of the dealers do their own business besides the “arhat” (commission) business. The dealers have their commission agents in Calcutta whom they pay Re. 1-4-0 per cent. as commission and 4 annas per cent. for miscellaneous expenditure. Transport to Cawnpore is chiefly by bullock cart which charge 4 annas a maund. The export by rail is very seldom made. In 1922 from February to October Bindki exported 25,420 cart loads of grain.

Rai Bahadur Ishwar Sahai, a big zamindar of this district, has recently opened a market at Hariharganj and is contemplating the installation of a rice hulling machine and a flour mill there.

(ii) Statement showing the total area and product of different crops.

Name of crop.	Total area sown.	Total produce.	Produce per acre.
	Acres.	Mds	Mds.
<i>Kharif.</i>			
Juar	3,550	24,850	7
Bajra	2,445	14,670	6
Arhar	60	480	8
Juar and arhar	143,645	1149,160	8
Bajra and arhar	32,862	262,896	8
Rice (early)	34,931	41,9172	12
Rice (late)	51,798	621,576	12
Maize	824	5,768	7
Urd and mung	585	2,925	5
Moth	1,059	4,236	4
Other pulses	26	104	4
Mandwa	2,683	18,781	7
Kondu, etc.	49	294	6
Sawan	2,243	15,701	7
Fruits and vegetables, etc.	3,884	38,840	10
Miscellaneous food crops	3,220	16,100	5
Cotton	1,739	6,956	4
Juar fodder	13,108	655,400	50
Guar and khurti	26	1,300	50
Indigo	7	...	...
Sugarcane	5,015	115,345	23
Til	2,340	11,700	5
Ground-nuts	23	345	15
Rendi	334	3,006	9
Sanai	5,877	23,508	4
Condiments and spices	182	910	5
<i>Rabi.</i>			
Wheat	38,257	34,4313	9
Wheat and gram	22,891	228,910	10
Wheat and barley	14,269	142,690	10
Barley	3,097	37,164	12
Barley and gram	128,483	1,15,6347	9
Gram	81,811	818,110	10
Peas	8,950	53,700	6
Masur	31	248	8
Other pulses	8	48	6
Potatoes	757	37,093	49
Turnips, etc.	473	11,825	25
Others	155	9,300	60
Opium (seed)	1,729	6,916	4
Tobacco	341	3,069	9
Linseed	607	2,428	4
Rape and mustard	53	265	5
Other oilseeds	71	355	5
Condiments and spices	191	955	5

4.—Glass bangles.

In mauza Birraon of tahsil Gbazipur there are about six or seven persons who make glass bangles of the most ordinary kind. These people make crude glass from "reh" and for a patch of land containing about 100 maunds of reh they pay Rs. 4 to Rs. 10 as royalty to the zamindar. Two representative samples of "reh" such as is used by glass makers and washermen were examined and were found to give good results though widely varying, viz., one of the samples yielded as much as 30 per cent. soluble solid matter containing about 28 per cent. of carbonate, only one per cent. of chloride and practically no sulphate; while the other sample gave about 12 per cent. of total soluble solids containing 8 per cent. of carbonate, about 2 per cent. of chloride and $1\frac{1}{2}$ per cent. of sulphate. The soluble salts are alkali salts. The bangle makers prepare glass by mixing bell-metal and brass with reh and then melting it. The daily outturn of a man is about 1,000 to 1,200 bangles. They hawk about in the neighbouring villages selling their bangles at the rate of 40 for 2 pice and very often they barter them for grain. Glass "pialis" are also made out of crude "reh" glass, but their manufacture is on such a small scale that it appears to be a mere curiosity now.

Some years ago Fatehpur district was known to make glass bangles to a very large extent. From reports it appears that the manufacture is diverted to Firozabad where of late glass making has fairly concentrated. From available reports it appears that about 30 years ago Fatehpur could export as many as 30 cart loads of glass bangles amounting to about 50,000 bangles in each cart. These bangles were all suited to local demand and exported mostly to Banda and Cawnpore.

5.—Hardware.

(i) *Brass utensils.*—Brass vessels are imported chiefly from Shamsabad in Allahabad district, Cawnpore and Mirzapur. Besides the imported articles, vessels of kaskut (princes metal) are manufactured at Bindki and Kora. There are about 50 workers engaged in this business.

Raw material (import).—Old broken utensils are generally purchased by mahajans at Re. 0-11-0 a seer and these are

remelted and recast. Broken vessels are purchased locally as well as imported from Banda district. Batlois and kalsas are chiefly manufactured. The articles are sold at the rate of Re. 1-5-0 per seer by the dealers.

Utensils of the annual value of Rs. 15,000 to Rs. 20,000 are made and consumed locally.

Wages and outturn.—The manufacturers get raw material from the dealers and get wages at the rate of Re 0-8-0 and Re. 0-10-0 a seer. The monthly outturn of a manufacturer is 24 kalsas or 28 batuas. The weight of 28 batuas is 2 maunds and that of 24 kalsas 2½ maunds, and the wages for their manufacture would come to Rs. 40 and Rs. 56-4-0 respectively. The dealer sells these kaskut articles for Rs. 123-12-0 at Re. 1-6-0 a seer. Deducting from this Rs. 61-14-0 spent by him in purchasing old utensils at Re. 0-11-0 per seer plus Rs. 56-4-0 given to the manufacturer as wages, his profit by the sale of 24 kalsas come up to Rs. 5-10-0. This would give a return of about 5 per cent. But with fluctuating rates he is in practice making much more.

(ii) *Locks and sarautas (nut-crackers).*—Locks are manufactured at Kalyanpur and Daryapur by five persons, and nut-crackers at Kasraon, Rajpur and Ajaipur by six workmen.

About 400 to 500 locks are annually made. The locks made are of two to four levers and have a good reputation for durability. These are generally sold from Re. 0-8-0 to Rs. 2.

These people get outside orders through the officials of the tahsil, etc., who get the locks made for their friends. But it is said that sufficient orders to keep these people engaged all the year round are thus secured. People from the neighbouring villages also purchase these locks.

In making a lock worth Rs. 2 the earnings of a workman are estimated to be as follows :—

				Rs.	a.	p.
Iron	...	...	...	0	4	0
Coal	...	...	...	0	2	0
Sohaga	...	...	...	0	0	3
Brass	...	...	...	0	0	3
				<hr/>		
		Total	..	0	6	6
		Selling price	...	2	0	0
				<hr/>		

Labour charges for two days, Re. 1-9-6.

Hence the daily earnings of a workman comes to about Re. 0-12-9.

Sarautas of different sizes and values ranging from Re. 0-3-6 to Re. 0-10-0 are usually made out of scrap iron. The daily outturn of a man is four *sarautas*. Iron is imported from Cawnpore and broken pieces of iron are also purchased locally.

Marketing system.—These people hawk about from village to village and visit fairs where they sell their productions. These manufacturers follow this occupation as subsidiary to cultivation.

In making four *sarautas* the earnings of a workman are estimated to be as follows :—

				Rs.	a.	p.
Iron	...	...	...	0	4	0
Brass nails	...	...	...	0	1	0
		Total	...	0	5	0
		Selling price	...	0	14	0
Labour charges for one day or daily earnings	...			0	9	0

There is one Lallu mistri in Bindki who manufactures iron safes to order. He charges Rs. 14 per maund including wages and price of iron.

6.—Leather.

(i) *Manufacture of boots and shoes.*—There are about six or seven mochis who manufacture boots and shoes of English pattern. Shoes of ordinary quality costing Rs. 3 to Rs. 4 are generally made. The daily outturn of a mochi is one pair and his daily earnings come to about Re. 1-4-0 or Re. 1-8-0. The cost of leather used in making a pair of shoes which would sell for Rs. 3-4-0 is Rs. 2. A cottage worker can, by making such a pair, save Re. 1-4-0. Chrome leather shoes are also made to order. Leather and other raw materials are brought from Cawnpore.

(ii) *Raw hides and skins.*—Fatehpur is an important distributing centre for raw hides and skins. There are three chief centres :—Hariharganj, Baqarganj and Jahanabad.

Import.—About 2,000 hides and 3,000 skins come every week to these markets from the neighbouring villages of Fatehpur and Banda districts. Nearly 1/6th of the total number of hides is estimated to be “halali” (slaughtered) and the rest “murdari” (dead). The latter mostly comes from the Banda district. The estimate of annual import of hides is 80,000 and that of skins a little above this figure. In 1907-08 the import of hides and skins in Fatehpur was about 7,000 per week. During the period of the war also the business was in a flourishing condition on account of the abnormal demand for leather goods, especially army boots. But in recent years the large surplus war stock has brought about a slump in the leather market.

Export.—Hides and skins are chiefly exported to Cawnpore, and it is said that therefrom the “halali” hides go to Calcutta and “murdari” ones to Madras. Prior to the war these were exported direct to Calcutta from this district.

Marketing system—People from the neighbouring villages of this and the Banda district bring raw hides and skins to the bazars. These are sold to *bioparis* personally visiting the markets or are purchased by local dealers. The latter in their turn treat them with salt and send them to their Cawnpore agents in carts paying Re. 1-4-0 for every 20 hides as cart hire. The agents sell them to the exporters charging a commission which varies from Rs. 2 to Rs. 2-8-0 per 20 hides. Commission on sale of skins is Rs. 2-8-0 per 100. The seller has to pay to the proprietors of the markets a royalty at the rate of 1 to 4 pice per hide and Re. 0-4-0 per 100 skins.

Season.—The business is very brisk during the four months of winter.

There are nine slaughter-houses in the district under the control of the District Board. The number of cows and buffaloes annually slaughtered come to 8,135, while about 40,893 sheep and goats are slaughtered.

List of slaughter-houses :—

Tahsil Fatehpur.

Haswa	...	Cows, buffaloes, etc.	...	1,050
		Goats, sheep	...	32,250

Andauli	...	Cows	...	...	300
Sangaon	...	Cows	...	...	300
Fatehpur-khas		Cows	...	...	3,200
Piranpur		Buffaloes	...	...	950
		Bullocks	...	....	650
		Goats	...	...	4,000
Garhiwa	...	Cows	...	...	200
		Buffaloes	...	...	150
		Bullocks	...	...	50

Tahsil Khajuha.

Qasba Binki	...	Cows, etc.	...	...	250
		Goats, etc.	...	...	1,018
Qasba Kora	...	Cows	...	...	895
		Goats, etc.	...	...	625
Gadhi	...	Cows	...	...	10
Jafarganj	...	Cows	...	...	10

Tahsil Ghazipur.

There is no slaughter-house, but people kill animals as under :—

Sheep	...	...	...	2,000
Goats	...	...	...	1,000
Cows	...	...	...	20
Buffaloes	...	...	..	100

There are 494,188 bovine animals and 166,642 sheep and goats in the district. If 2 per cent. of them be taken to be dying every year, the supply of hides and skins of dead animals would come to 9,883 and 3,332 respectively.

Weight.—The weight of a buffalo hide is between 12 to 16 lbs., while that of a cow hide from 6 to 9 lbs. One hundred skins ordinarily weigh from $3\frac{1}{2}$ to $3\frac{3}{4}$ maunds. A goat or a sheep possesses between 8 to 12 seers of flesh, a buffalo between $1\frac{1}{2}$ to 2 maunds and a cow between 1 to $1\frac{1}{2}$ maunds.

Prices.—Prices of cow or buffalo flesh range between 1 anna six pies to annas 3 per seer, while that of goat and sheep from

annas 6 to annas 8 per seer. One man exports dry flesh of cows and buffaloes to Rangon during the four months of winter. Prices of hides range between Rs. 2 and Rs. 8 each, and those of skins between annas 12 and Rs. 2 each. The present market rate for hides is Rs. 22 per maund and Rs. 162 per 100 skins.

(iii) *Tanning*.—Butchers carry on bark-tanning in Abunagar and Basonapur mohallas of Fatehpur City. Tanned leather is either used locally or goes to Lalgopalganj in the district of Partabgarh. The method of tanning described by Mr. H. G. Walton, I.C.S., in his monograph on tanning and working in leather, which is generally in vogue, need not be recapitulated here.

Suggestions for improvements.—With a view to effect improvement in the processes of tanning, the system of training apprentices should be adopted who, after receiving proper training, should be sent out by Government to different districts for educating local tanners by practical demonstrations.

7.—Miscellaneous.

(i) *Basket making*.—Women of the Kaparia caste at odd moments make baskets in Bindki where several families of this caste have settled down. The baskets and pitaras are of strong texture, having coloured designs at places. These are fancy and attractive to look at. The raw material used is 'kans' (a kind of weed) and palm leaves. The male members of the family sell these baskets at the rate of two annas six pies to four annas and pitaras at eight annas to Re. 1-4-0. These are also bartered for used clothes.

(ii) *Cattle trade*.—Fatehpur district does roaring business in cattle. The local stock of cattle found in the *doab* is of inferior description and the better varieties are all imported. Bullocks from Manjhanpur and Banda and most of the western districts and Oudh buffaloes are brought to different bazars in the district for sale. The principal markets where cattle business is extensively transacted are Jahanabad, Bardara, Pauli, Fatehpur and Naraini and *bioparis* from Shujanganj, Badshahpur and Koeripur, district Jaunpur, Shahzadpur in district Fyzabad, Allahabad, Bara Banki, Partabgarh and Sultanpur districts visits these markets with the object of

purchasing cattle. January to May is the season when sale of bullocks and calves, etc., is carried on, while the sale of buffaloes always takes place in November. In these months the business in cattle is brisk and on each bazar day cattle numbering about 2,000 to 3,000 are seen in the market.

Banjaras (a criminal tribe) also bring 30,000 to 40,000 head of cattle for sale every year in this district from Etawah, Mainpuri, Bharatpur, Muttra and Cawnpore.

The price of good Bundelkhand bullocks range between Rs. 100 to Rs. 200, while those of calves from Rs. 15 onwards.

The Fatehpur district markets do a large business in the sale mostly of agricultural cattle, and large herds are sent out of the district. Some business is also done in animals which are purchased by butchers for the purposes of slaughter-houses.

(iii) *Ganjifa (playing cards)*.— Two persons, Faqir Bakhsh and Ahsan Ali, make playing cards at Khajuha. Change in tastes and the introduction of foreign cards have compelled many of the ganjifa manufacturers to give up this occupation. These cards were very much in vogue in the Muhammadan period.

Process.— Kalpi paper such as is used for bahis is used for the manufacture of this ganjifa. Two sheets of paper interlayered with very fine muslin are pasted together with flour paste having some *tutia* in it. *Tutia* is mixed with paste to prevent insects attacking the paper. The whole is then exposed to the sun, and when it is thoroughly dried, round pieces are cut out of it by means of an iron instrument called "siani". These round pieces are then painted with a solution made up of one seer chalk in 4 chataks of "sarca" (glue). Three coatings are usually given. After the third coating, the pieces are pressed with a piece of stone. A fourth coating of the above solution is then applied and the round pieces are painted in different colours. A solution of pewter is used and a substance "*monger ki pewar*" which is of yellow colour mixed with varnish and water is then applied which gives gold colour to the pieces. They are then made smooth by rubbing with "mohra".

A man can make about 50 packs ganjifas in a month and the price of each ranges from Re. 0-8-0 to Rs. 4. The cost of making 50

packs of ganjifas is estimated to be about Rs. 12, the selling price of which would average Rs. 50.

(iv) *Jail industries.*—Durries, carpets, munj and also fibre mattings are manufactured. Aloe fibre ropes which are usually 30 to 45 hands in length and *dosuti* which is exclusively meant for the use of the prisoners are also made.

Raw material.—Cotton is imported from Hathras from Messrs. Tulsidas Tejpal through the Stores Purchase Officer attached to the Industries department, and aloe leaves are taken from the railway premises on payment of Rs. 3 per year. The jail sends its own cart for fetching aloe leaves. *Sarson* is purchased locally.

Export.—Recently a little quantity of aloe fibre was supplied to Hamirpur Jail at Rs. 10 per maund. Otherwise the sale is all local, and these aloe fibre things are made to order.

Outturn.—In 1922, 42 durries and 2 carpets, cotton "niwar" weighing 1 maund 8 seers and aloe fibre "niwar" weighing 15 seers were manufactured. In a day of 9 hours, 4" of carpet or 2' of durrie or 32' of *dosuti* can be manufactured by two prisoners. Durries are sold at the rate of Rs. 3 per seer, carpets at Rs. 3-8-0 to Rs. 4 per seer and aloe fibre ropes for which there is a great demand, sell at Rs. 12 per maund. Two prisoners can make 3 ropes each weighing about 1½ seers—30 hands in length—in one day, and a durrie measuring 7' × 4' in five days out of which one clear day is spent on warping.

In 1922 the expenditure of this jail on raw material came to Rs. 1,692-8-1 and the receipts to Rs. 2,797-5-11.

There are two hand *kolhus* for the expression of *sarson* oil. The yield of oil is 3 seers out of 9 seers of *sarson*. This oil is meant for jail consumption.

There is no indication of the convicts after their release following any profession taught to them in jail. They rather revert to their own ways.

Suggestions for improvement.—On the one hand jails are accused of the high cost of production, notwithstanding the fact that labour is free and is charged very low. On the other hand, they are asked not to sell low and come in competition with the

public enterprise. The costs of jail productions are bound to be high as only good material is used, but as prices go down with the help of the Government Stores Purchase department, they will be gradually lowered. It would be a good thing if the jail industries are organised on commercial basis and some system of payment of rewards for good conduct is introduced.

(v) *Tat-patti weaving*.—The manufacture of tat-pattis is done in villages as a subsidiary occupation to cultivation. Villagers in their spare moments take to this as an eminently suitable home industry.

Hemp is grown over 5,877 acres and is available to the extent of 23,508 maunds. Sanai is at first immersed in water and thoroughly washed. It is twisted into strings and ultimately woven into pattis.

It takes one man about 3 days to weave one patti 9 yards by 8 inches. The margin of profit in such a patti is estimated to be Re. 0-15-0 as 2½ seers *sann* required for it costs Re. 0-7-0 and the patti would sell for Re. 1-6-0.

Season.—The manufacture of pattis goes on all the year round but the sale is brisk in winter and after the *Holi* festival.

Marketing system.—The villagers sell these pattis in markets on market days. It is estimated that about thirty thousand pattis of the aforesaid dimensions are annually manufactured in the district.

(iv) *Whips*.—Fatehpur claims a good deal of reputation for its elegant whips of various descriptions. About 10 to 15 men in the city are engaged in this industry. Riding and driving whips and old fashioned *koras* worked with gold and silver thread with handles covered with silver plate or leaf give eloquent evidence of fine workmanship.

Import.—Cane and horn handles are imported from Calcutta, Kalabatun and silk yarn from Benares chiefly and sometimes from Lucknow and cotton yarn from Cawnpore; wax and polish are purchased locally. The total value of imports of raw materials is estimated to be Rs. 4,600.

Export.—Fatehpur whips have very often been exported to Basti, Amraoti, Nagpur, Jubbulpore, Hyderabad, Quetta, Amritsar, Benares and Bhandara. But the quantity of export to such places is very insignificant. Bateshar and Makanpur fairs and the local markets are the chief places where these whips have got a sale. The total value of articles sold annually is roughly estimated to be Rs. 10,000.

Marketing system.—It is very seldom when these people receive direct orders from outside. They themselves visit native states and different important fairs with a view to sell their articles.

Prices, etc.

Articles.	Cost of materials, including wages.	Selling price.	Time taken to manufacture each article.
	Rs. a. p.	Rs. a. p.	
Driving whip (silver thread work).	16 0 0	20 0 0	One week.
Driving whip (gold and silver thread work).	6 0 0	8 0 0	2-3 days.
Driving whip (plain) ...	2 0 0	2 12 0	1½-2 days.
Cane riding whip (gold thread work).	4 12 0	6 0 0	2½ days.
Riding whip (gold thread work).	4 12 0	7 4 0	3 days.
Kora (silver mounted gold thread work).	22 0 0	25 0 0	One week.

Presentation whips of the value of Rs. 100 to Rs. 150 can also be made to order.

Suggestions for improvement.—The general complaint of the manufacturers is that there is very little demand for their articles. The workmanship is good, and with better advertisement sales should improve. Travelling agents should be tried. A co-operative society already exists, but it should introduce the manufacture of more serviceable articles and have them made on commercial lines.

The whip makers desire help in the following directions :—

- (i) Opening of a stall at the Fatehpur railway station.
- (ii) Joint purchase of raw material by the co-operative society in order to lower the cost of production.
- (iii) The appointment of one of them as a Director of the District Bank.

These suggestions are likely to help the industry.

8.—Oils.

(i) Ordinarily castor oil is expressed in wooden bullock-driven kolhus such as are seen everywhere in the country. But Bindki has two hand screw presses for the expression of castor oil. The one is owned by Messrs. Mahabir Prasad Mohan Lal and the other by M. Madho Prasad. The screw hand presses yield about 15 to 30 seers of oil from $1\frac{1}{2}$ maunds of decorticated seed in $1\frac{1}{2}$ to 2 hours and an oil-cake was found to contain on examination residual oil amounting to 5 to 6 per cent. on the weight of the cake.

Import of raw material.—Castor seed amounting to about 5,000 maunds a year is purchased locally at the rate of Rs. 6 per maund. Five different seeds were examined for their oil content and were found to yield by solvent extraction a quantity of oil varying between 46 and 50 per cent. calculated on the weight of the whole seed. Oilseeds can be had in large quantities in the big grain market of Bindki. Hessian (small bags worth Rs 400 is obtained from Cawnpore at the rate of 100 yards for Rs. 10. Coal worth Rs. 2,000 at Rs 2 per maund of 40 seers is purchased locally or obtained from Jahanabad within the district.

Export.—Oil is not exported. It is sold locally on bazar days. The castor cake finds a good market in Burdwan and other places in Bengal where it is sold at the rate of Rs. 2-12-0 to Rs. 3-2-0 per maund.

Outturn.—The outturn of oil is estimated to be 16½ seers from one maund of castor seed. Its annual produce comes to about 1,700 maunds which is sold at the market rates ranging between

Rs. 19 to Rs. 21 per maund. The percentage of yield is generally estimated as follows :—

Oil	...	...	...	40 per cent.
Cakes	...	...	...	45 "
Husk and refraction	...	...	...	15 "

Marketing system.—Sale is local,

Season.—The work is dull during the rains.

Machinery and process.—Both these presses are two-man power. A screw wheel is constantly turned by two men till the pressure is sufficient to express oil out of the seeds. The bags containing the crushed castor seed are put between iron plates which are pressed by the wheel turning round and the fire burning in front of the row of plates melts the contents into oil which flows down into a tin receptacle placed underneath.

Labour.—Women are employed at Rs. 7-8-0 per month each for separating husk from the seed. Men are generally engaged on work requiring hard labour at Rs. 19 or Rs. 20 per month each.

Suggestions for improvement.—The local seed is said to be of inferior quality which does not yield a good percentage of oil. Castor seed can yield up to 40 per cent. of oil. It will pay the factory if it advances good seed to the agriculturist and contracts to buy their produce every year. The Agriculture department should help the factories in obtaining good seeds.

(ii) *Mahua seed.*—Mahua seed has found a very favourable market in Amritsar, Lahore and other places in the Punjab where mahua oil is used in the manufacture of soap. It is exported also to Delhi and Cawnpore, Lucknow and Bombay. The import of mahua seed annually into Bindki market varies from 2,000 to 3,000 tons. Mahua trees are found in very large numbers in Khaga tahsil from where mahua seed is exported in very large quantity to Calcutta and Bombay. About 4,000 tons of rapeseed are imported into Bindki market annually.

9.—Textiles.

A.—COTTON.

(i) *Ginning.*—Ginning is done by hand. In the census of 1911 there were 649 ginneries in the district. Besides these

there is one ginning factory owned by Mr. Cocolas and located at Chandagral, at a distance of about a mile from Bindki road railway station. It was started 4 years back. It gins about 21750 maunds of cotton annually out of about 70,000 maunds of kapas. It has no press.

Import of raw material.—The factory imports kapas from Khaga tahsil, Sirathu (in Allahabad district), Jahanabad and other villages in Fatehpur district. The coal is obtained from Cawnpore and Ramnagar. Bags are supplied by the Cawnpore mills who buy the cotton and are sent to the factory on empty carts returning from the mills.

Export.—Ginned cotton is exported to Cawnpore by bullock carts which charges Re. 0-7-0 per maund. Cotton seed is sold locally to *bioparis* who come from the Punjab and Cawnpore. The present rate is 13 seers for a rupee.

Outturn.—The daily outturn of cotton out of the 500 maunds of kapas, costing about Rs. 6,400, required for this mill, comes to 145 maunds. The cotton sells at Rs. 48 per maund but the rate keeps on changing from time to time. The percentage of the production of cotton depends to a very large extent on the quality of the cotton seed. If the seed is inferior the percentage would be below one-third, but if the seed is of a superior quality a higher percentage, which is generally one-third, is invariably reached.

Season.—Kapas is sown in July and the crop is ready by September. The ginning season is from October to February.

Labour.—Labour is scarce. Certain zamindars are very loath to allow labourers to go to the mill, and in fact have started spiriting away labour en route to the mills.

(ii) *Printing.*—Printing of certain fabrics is done at several places such as Jafarganj, Kishanpore, Khuta, Sarki, Bahua and Datauli, though finer fabrics are printed only at Jafarganj. There are about 23 men in all in the district who do this work. Jafarganj prints bed covers, curtains and awnings, table cloths, *janimas* and *dastarkhwans* on markin and other fine fabrics. The speciality of the prints is the Persian and Urdu verses on cloth with stencils. These printers are called *kalamkars*. Besides couplets, other

designs include the figures of dancing peacocks, jhar, surahi, fish, lion, deer and birds. The figures are drawn with the help of bamboo pens having a little wool attached at the end and for writing couplets pens made of "nai" are used.

The process of printing is described in the monograph on "dyes and dyeing" by Mr. Hadi.

Jafarganj printing was greatly encouraged by the keen interest taken in it by Mr. Growse, a Collector of Fatehpur district. But now there are only two *kalamkars*, Irshad Ali and Qadir Ali who carry on this business—others have either died or migrated to Bombay.

It takes 12 days to make a curtain. Curtains sell at Rs. 12 to Rs. 24 per pair. Out of a *than* of markin 6 curtains can be made. The annual outturn is about 72 to 80.

Raw material import (cloth).—Chhipis other than *kalamkars* print lihafs, toshaks and dogas, etc. Garha is obtained either from Mau Ranipur, district Jhansi, or Bhuian Rani, district Banda, and twill from Cawnpore. Local garha is also purchased, but only occasionally.

Blocks.—Blocks are imported from Lucknow, Nawabganj, district Partabgarh, Kanauj and district Banda, and are also made locally at Jafarganj by one carpenter Ramdayal. Designs are given by the printers. Irshad Ali is in possession of several designs drawn on paper handed down to him from his ancestors. Prices of blocks vary from Re. 0-8-0 to Rs. 5.

Dyes.—Alizarine dyes are used and imported chiefly from Cawnpore and occasionally from Bombay.

Outturn.—The annual outturn is estimated to be about 50 thousand yards.

Season.—These people generally go on printing from April to October and let their stock accumulate and then go about from place to place selling their stock for the rest of the year.

Marketing system.—The printers themselves move about from village to village and city to city selling their productions chiefly at Shevrajpur and other fairs and Bhuian Rani (Banda district) and Cawnpore.

Prices.—The prices of lihafs and toshaks vary from Rs. 2-4-0 to Rs. 6. Jajams which are mostly made to order are sold at Rs. 6 to Rs. 12, the price depending on the size of a jajam.

Jafarganj kalam-ka-kam is certainly on the decline for several reasons. In the first place most of the followers of this special art have migrated to Bombay where they find themselves better off by securing work in other factories or firms. Death too has caused a heavy loss in their number. A few printers only now remain, but even they find it difficult to make the two ends meet in the present economic depression. They have to borrow money from local mahajans who charge exorbitant rates of interest.

B.—WOOL.

Sheep and goats are also found in large numbers in this district as the cattle census statement in chapter first shows. Sheep are reared by Gadarias for wool. The total annual production of white wool is estimated to be about 20,000 lbs. while that of black wool 36,000 lbs. 1 to 1½ lb. is the average production of wool per sheep. The shearing is done three times in the year, e.g., in Asarh, Katik and Phagun. The black and white wool of average quality is purchased by the dealers from the Gadarias at the rate of Rs. 19 and Rs. 22 per maund respectively, and sold at Rs. 23 and Rs. 27 or Rs. 28 per maund respectively.

White wool is exported chiefly to Mirzapur where it is used in carpet making and black wool finds a good market in Bhagalpore, Arrah, Ghazipur and Muzaffarpur in Bengal.

Most of the *bioparis* visit the district and make purchases personally on the spot.

10.—Utilization of slaughter-house bye-products.

Bones.—Abdul Karim, Muhammad Yasin Khairat Ullah and Niaz Ahmad Khan are the principal dealers in bones.

Export.—Export amounts annually to a little above 6,000 maunds.

Bones are sent chiefly to Calcutta, and some to Lucknow and Cawnpore.

Prices.—Bones are at present purchased at the rate of Re. 1-4-0 per maund and sold at the rate of Rs. 3 per maund. Prices fluctuate according to demand.

Marketing system.—Bones are collected in villages by chamars either on their own account or for the city dealers. The former are brought by them to the city on their own carts. The latter are usually brought on the dealer's carts. The dealers collect them and export them to Calcutta. They have fixed agents in Calcutta. The agents charge a settled commission. Hafiz Abdul Ghani, Abdul Hakim, agents of Messrs. Graham & Co., also purchase bones locally from the dealers mentioned above and export them to Calcutta where these are crushed and shipped to foreign countries.

The profits in this business are estimated at about Rs. 300 per wagon containing 300 maunds of bones.

CHAPTER III.

INDUSTRIAL POSSIBILITIES.

The industrial survey made in the district has disclosed that there are some industries which are either in a very incipient stage of development or do not exist at all, although there are possibilities of their being considerably developed in the district owing to the plentiful existence of raw material or demand for consumption.

(1) *Tanning.*—The business in hides is considerable. In 1907-08 it came to the value of about Rs. 50,000 every week. Hides are brought into this district from Allahabad, Partabgarh and Rae Bareilly districts. The district supplies a very large quantity, and it is very likely that if the demand expands by the opening of a tannery, the import of hides will increase considerably. It is expected that the necessary capital will be forthcoming if an attempt is made to organise an up-to-date tannery. Besides this, the tanners who are mostly chamars do not work on modern lines, and it is also necessary that facilities for the training of the local chamars be provided by means of demonstrations and lectures, etc. The hides are exported in raw state in large numbers to Cawnpore where they are tanned or exported to foreign countries. Co-operative societies for tanners will help considerably in improving the condition of the industry and in organising demonstration parties also. The chief tanning material, babul bark, is available here in sufficient quantity; and if there be demand for more, the tract along the banks of the Jumna can be easily utilized for babul plantation as in the Etawah district.

About a thousand persons being actually engaged in this business there will be no scarcity of trained labour in the district. Most of the "rangias" of Asti village have received training by serving in Cawnpore tanneries and they would naturally like to return to their own district if a tannery is started here.

Cawnpore being about 2 hours' run from Fatehpur any help required for repairing the machinery could be easily available.

(2) *Weaving*.—To improve the weaving industry, fly-shuttles should be popularized by means of demonstration parties. This will also introduce a subsidiary industry in the shape of the manufacture of fly-shuttle looms.

(3) *Oil mill*.—The area under cultivation of the oilseeds is considerable, being—

	Acres,
Til	2,340
Rendi (castor seed)	334
Linseed	607
Rape and mustard	63

Besides these a large quantity of mahua seed is also available as mahua grows abundantly; while there is a large import of oilseeds in the Bindki markets from other neighbouring districts. There are only two hand-presses at Bindki for expression of castor oil. The other oilseeds are therefore exported as only a small portion of them is utilized by the local telis. There is therefore ample scope for the establishment of more oil mills and it will not be difficult to find a capitalist ready to invest money in such a concern.

(4) *Dal splitting*.—"Arhar" dal is exported to Calcutta in sufficiently large quantity from Bindki, Kishunpur and Khaga, but splitting is done in small stone hand mills. Improved appliances should be introduced here also such as have been in use in several other districts.

To sum up—

(1) The Government may be pleased to start a demonstration factory for popularising the use of fly-shuttles.

(2) A co-operative society of tanners should be formed and steps be taken for placing the services of an expert tanner at the disposal of such a society for teaching improved scientific methods of tanning.

CHAPTER IV.

STATISTICS.

1.—Building materials.

(i) Jwala Prasad Lime Works, Bindki—

Annual consumption of raw material—4,003 c.ft. of kankar at Rs. 8 per 100 c. ft.

Annual outturn of lime—3,300 c.ft. for local use.

Labour—4 hands at 6 annas to 8 annas per day. Piece wage system.

Sale price of lime—Rupees 25 per 100 c. ft.

(ii) List of kankar places :—

Name of village.	Estimated area.	Average thickness of lands.	Average of kankar.
	Bighas.	Yard.	Yard.
Babullahpur (Khaga tahsil)	... 20	1	1
Ganshdaspur ditto	... 20	1	1
Shahzadpur Khaga ditto	... 50	1	1
Purain ditto	... 50	1½	1
Kotagbar ditto	... 40	1½	1
Hardon ditto	... 40	1½	1
Zafrabad (Khajuba tahsil)	...	1760' × 15' × 2'	
Kurean ditto	...	1760' × 15' × 3'	
Gunir ditto	...	1760' × 15' × 2'	
Khajuba ditto	...	1760' × 15' × 1'	
Kaparia ditto	...	1760' × 15' × 2'	
Bokewar to Jahanabad road	...	1760' × 15' × 5'	
Basti Khara mazra Mandraon	...	1760' × 15' × 2'	
Bhawanipur mazra Mandraon	...	1760' × 15' × 2'	

2.—Chemicals.

(i) List of places where reh is found :—

Tahsil Khajurha.

Kanspur Gugauli	...	...	5 acres.
Janta	...	...	10 "
Chakki	...	...	10 "
Okbra	...	...	20 "
Mohwan	...	...	10 "
Baraura	...	...	10 "
Rena	...	...	10 "
Kutia	...	...	20 "
Amaura	...	...	10 "
Gunir	...	...	20 "
Reori Buzurg	...	...	5 "
Deomai	...	...	1 acre,
Bargawan	...	...	$\frac{1}{2}$ "
Jagdishpur	...	...	2 acres.
Ghuroba	...	...	9 "

Tahsil Ghasipur.

Chak Qazipura	...	...	25 acres.
Luswan	...	...	30 "

(ii) Saltpetre—

List of places where saltpetre is made:—

Tahsil Khaga.

Amaon.
 Alipur.
 Budwan.
 Roshanpur Tekari.
 Samauri.
 Chhimi.
 Purain.
 Qasba Sahour.
 Kahi.
 Khaga.
 Saunt,

Tahsil Khajuha.

Village.	Amount.	Rent paid
		to zamindar.
	Maunds.	Rs.
Okhra ...	100	45
Itraura Pilkbini...	100	25
Madokipur ...	100	40
Gunir ...	100	50
Mohar ...	100	30
Galatha ...	80	30
Sugnapur ...	50	25
Malakapur ...	25	25
Bijauli ...	50	25

N.B.—Gokul Prasad of Sarai purchases 300 maunds per year at the rate of Rs. 4 per maund.

3.—Food grains.

Wheat grinding.—Jwala Prasad Flour Mill, Bindki.

Machinery.—Oil Engine 16 H. P.

Daily outturn.—30 maunds to 70 maunds.

Charges for grinding.—6 annas a maund from shopkeepers and 8 annas a maund from others.

Labour.—7 hands—

One mistri at Rs. 50 per mensem.

Five labourers at Rs. 8 to Rs. 12 per mensem.

One weighman at Rs. 15 per mensem.

4.—Oils.

Mahabir Prasad Mohan Lal Oil Press, Bindki.

Raw material—

*Import.***A.—Quantity—**

(1) Castor seed ...	2,500 maunds.
(2) Hessian ...	2,680 yards.
(3) Coal ...	Rs. 870 worth.

B.—Place of origin.—Local and Cawnpore.

C.—Value of—

	Rs.
(1) ...	1,500
(2) ...	268
(3) ...	870
Total ...	2,638

Working capital :—Rupees 3,000.

Labour :—

(1) *Number of hands* :—10.

(2) *Wages and system of payment* :—

Women at Rs. 7-8-0 per mensem.

Men Rs. 19 to Rs. 20 per mensem.

The total annual expenditure of the factory on this account is Rs. 1,155.

	Rs.
<i>Total outturn</i> :—	
Oil 875 maunds worth	15,132
Oil-cakes worth ...	3,376
Husk worth ...	40
Total ...	18,547

Expenses including Rs. 110 as shop rent, Rs. 100 bad debts and Rs. 444 heating and miscellaneous charges, come to Rs. 27,857.

Profit :—Profit is estimated to be over 20 per cent.

5.—Textiles.

Ginning.—Cotton Ginning mill owned by Mr. Cocolas at Chandagra.

Number of gins :—24 gins worked by means of an oil engine with 32 B. H. P. and a boiler having a pressure of 100 lbs.

Number of hands employed : 101 in all as detailed below :—

Day labourers : 36 women at 4 annas 6 pies per day.

36 men at 5 annas to 8 annas per day.

Engineering staff : 1 engine driver at Rs. 70 per month.

3 fitters at Rs. 45 and Rs. 50 per month.

6 oil-men for gins at Rs. 16 to Rs. 22 per mensem.

2 firemen at Rs. 23 to Rs. 25 per month.

1 mochi at Rs. 25 per mensem.

1 carpenter at Rs. 35 per mensem.

2 engine oil-men at Rs. 25 and Rs. 30 per mensem.

Office staff	1 head clerk	...	} Rs. 350 per month.
	1 clerk	...	
	3 m'unshis	...	
	1 jamadar	...	
	1 weighman	...	
	2 peons	...	
	2 chaukidars	...	
	2 watchmen	...	

al strength 101

The total expenditure of this mill is said to be about Rs. 15,000 per year, and the working capital is 5 lakhs or so.

CHAPTER V.

DIRECTORY.

1.—Bank.

District Co-operative Bank, Fatehpur.

2.—List of important whip makers in Fatehpur City, muhalla Abunagar.

Raghubar Dayal Madari Lal.

Kundan Lal Debi Dayal.

Raghubar Dayal Ganesh Prasad.

Ganesh Prasad Ram Prasad.

3.—List of dealers in wool at Fatehpur.

Bisheshar.

Ghulam.

Chhedua.

Faqire.

Juman.

Bacha.

Thakurdin.

4.—List of manufacturers of locks and nut-crackers.

Baiju, Luhar	} Kasraon, tahsil Khaga.
Narain Luhar	...	...
Manni, Luhar	...	...
Prag, Luhar ...	...	...
Chhitani, Luhar	...	...
Sital, Luhar	} Daryapore (Kalyan- pur), tahsil Khajuha.
Ram Dayal, Luhar	...	...
Jagmohan, Kacher	...	...
Bikhari, Kacher	...	...
Ram Nath, Kacher	...	...
Suraj Din, Kacher	

N.B.—These last four are all brothers.

5.—List of principal grain merchants.

Bhajanlal Damri Lal	} Kishanpur mandi.
Ganesh Lal Mohan Lal	...	...
Rangopal Bharatlal	...	...
Mukandi Lal Bishambhar Nath	...	...
Rikhi Lal Gaya Prasad	...	...
Munnoolal Shiva Sahai	...	...
Jia Lal Banwari Lal	...	...
Ajudhya Prasad Rangopal	...	...
Bishnath	} Khaga mandi.
Lachhman Prasad Rameshwar	...	...
Hanuman Prasad Manni Lal	...	...
Puttu Lal Misra	...	...
Beni Madho	...	...
Ram Piyare	...	...
Thakur Prasad Ram Prasad	} Bindl
Kundanlal Ramchandra	...	...
Krishna Chandra Braj Kishore	...	...
Ram Bakhsh Nath Mal	...	...
Ramjas Jai Narain	...	...
Tormal Madho	...	...
Lodhi Ram Raja Ram	...	...
Loukarandas Munnalal	...	...
Chandralal Dayabai	...	...
Rampratap Kanhayalal	...	...
Gobind Ram Shankar Lal	...	...
Bhikharilal Binda Prasad	...	...
Lachhmi Narain Tulsi Ram	...	...
Ram Jiawan Munnalal	...	...

6.—List of calico printers.

Allauddin	} Ghazipur tahsil.
Suleman	...	...
Miran Bakhsh	...	...
Fatoo	...	...
Jumman	...	...
Karim	...	...

Lal Mohammad	}	Kishanpur, tahsil Khaga.
Nabi Bux	...	...
Mohammad Yunis	...	...
Jan Mohammad	...	...
Khuda Bux	}	Tahsil Khajuha.
Ramzan	...	...
Irshad Ali	}	Jafarganj.
Rahim	...	...
Qadir	...	...
ulam Mohammad	...	...
Chhiddu	}	Khunta.
Din Mohammad	...	...
Nanhu	...	...
Manna	...	...
Lallu	...	...
Ghafur	...	...
Wafati		

7.—List of dealers in hides, skins and bones.

Yasin	Fatehpur,
Karim	Bindki.
Shakur	}
Pachoo	...	...	...
Ramzan	...	...	...
Allah Bux	...	...	...
Abdul Hasan...	}
Qadir	...	...	...
Karim	...	...	...
Karim Chiwa	}
Abdul Hakim	...	...	...
Said	...	...	...
Hafiz Abdul Karim	...	...	...
Khairat Ullah	...	...	...
Abdul Qadir...	...	...	...
Abdul Karim	

8.—List of important dealers in tanned leather.

Durga Bhagat	} Fatehpur.
Mullu Ram	...	...
Bhukhan	...	...

9.—List of Cawnpore agents (in tanned leather).

Hafiz Mohammed Halim.
 Mohammad Hanif,
 M. Nabi Bux.
 Haji Abdulla.
 Abdul Wassay.
 Husain-Ud-din.

10.—List of principal Cawnpore *biyoparis* who visit the places for making purchases of tanned leather.

Karim.
 Durga Bhagat.

11.—List of principal purchasers of tanned leather from the Partabgarh district.

Abdul Hamid.
 Shubrati.
 Ghazi.
 Sadool, and 4 others.

12.—List of bangle-makers.

Ram Adhin, Kacher	} Birraon, tahsil Ghazi- pur, district Fateh- pur.
Ram Charan, Kacher	...	...
Gayadin, Kacher	...	...
Banda, Kacher	...	...
Badlu, Kacher	...	...
Bacha, Kacher	...	...
Durga, Kacher	...	...
Lala, Kacher	

13.—List of lime kilns.

		Outturn:
Makhdum Bux, qasba Bindki	...	50,000 c. ft.
Mahraj Bux ditto	...	50,000 c. ft.
Paragi ditto	...	50,000 c. ft.
Jawahir Prasad ditto	...	100,000 c. ft.

14.—List of brick-kilns—(concl'd.).

Gokul Kalwar	...	...	1 kiln, Fatehpur.
Kunji Kalwar	...	...	1 ditto.
Bhura Musalman	...	...	1 ditto.
Retired Sub-Inspector	...	...	1 ditto.
Ch. Basityar	...	...	2 kilns, Fatehpur.
Babu Lalit Kishore	...	...	2 ditto.
M. Mohammad Gbulam Mustafa	Khau	2	ditto.
Juggan Miyan	...	...	1 kiln, Fatehpur.
Mathra Singh	...	...	1 ditto.
Kalan Miyan	...	...	1 ditto.
Maunu Baqal	...	...	1 ditto.
Alakh Sarup in Berni	...	...	2 kilns.
Hingan Khan	...	...	Qasba Bindki.
Makhdum Bux	...	...	Ditto.
Ram Dayal	...	...	Ditto.
Mahraj Bux	...	...	Ditto.
Lala Manna Lal	...	...	Ditto.
Din Dayal	...	...	Ditto.

CHAPTER VI.

MISCELLANEOUS.

1.—List of foreign articles seen in Fatehpur bazar.

1. Buttons (Mother o'pearls) from Japan.
- *2. Matches (Japan).
- *3. Lanterns (Germany).
- *4. Socks.
- *5. Soaps.
6. Handkerchiefs.
7. Alluminium wares.
- *8. Locks (Millers).
- *9. Japanese bangles (reshmi).
10. China toys.
11. Japanese lantern chimneys.
12. Brass and iron wire.
- *13. Combs.
14. Wicks.
- *15. Brass eyelets for shoes.
16. Sowing machines.

N.B.—The articles marked * can be replaced by Indian made things.

2.—Statement showing railway freight for different commodities sent from the district to places of export.

(i) Grains :—

From	To	Freight per maund.
Khag	Bombay	0 13 1
	Calcutta	0 8 4
	Cawnpore	0 2 5
	Agra	0 3 8
	Allahabad	0 1 8

From	To	Freight per maund.
Bindki road ...	Delhi ...	0 5 0
	Jubbalspur ...	0 6 3
	Calcutta ...	0 8 8
	Cawnpore ...	0 1 9
	Khagra ...	0 7 8
	Jharia ...	0 7 8
	Bombay ...	0 11 8

(ii) Sheep-wool :—

From	To	Freight per maund.
Fatehpur ...	Mirzapur ...	0 12 0
	Bhagalpur ...	2 8 0
	Muzaffarpur ...	2 12 0
	Cawnpore ...	0 5 0

3.—Directory of industrial population of Fatehpur district according to the census figures of 1911.

	Total workers.
Sheep, goat and pig breeding ...	334
Extraction of saltpetre, alum and other substances soluble in water ...	194
Cotton ginning, cleaning and pressing ...	1,163
Cotton spinning, sizing and weaving ...	7,585
Jute spinning, pressing and weaving ...	28
Rope twining and string ...	3,431
Other fibres (cocoanut, aloes, etc.) ...	64
Wool carding and spinning and weaving of woollen blankets and carpets ...	7
Hair, camel and horse hair, bristles work and brush making ...	77
Hides, skins and hard materials—Turners, curriers, of wood material feather dressers and dyers ...	4,400
Sawyers, carpenters, turners and joiners ...	2,497
Basket makers and those engaged in other industries of wood material including leaves ...	1,574
Workers in iron and makers of implements ...	4,973
Workers in tin lead ...	15
Potters and earthen bowl makers ...	5,070

42 *INDUSTRIAL SURVEY FATEHPUR DISTRICT.*

	Total workers.
Manufacture of explosive material ...	142
Manufacture of vegetable and mineral oil ...	6,773
Rice pounders and huskers and flour grinders ...	3,322
Bakers and biscuit makers ...	9
Grain parchers ...	5,962
Butchers ...	2,241
Sweetmeat makers, etc. ...	407
Manufacture of tobacco, opium and ganja ...	37
Shoe, boot and sandal makers ...	2,512
Washing, cleaning and dyeing ...	6,201
Barbers, etc. ...	9,909
Stone workers and brick layers ...	725
Thatchers, building contractors, tiles, etc. ...	277
Makers of bangles, rosaries, bead and other neck- laces ...	1,359
Fishing tackle makers, etc. ...	39

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Fyzabad District

By
H. N. SAPRU, B.A.



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CONTENTS.

	<i>Page.</i>
FOREWORD	i—vi
CHAPTER I—	
1. Features of the district...	1
2. Population	2
3. Ferries	<i>ib.</i>
4. Roads	3
5. Railways	4
6. Markets	<i>ib.</i>
7. Fairs	5
8. Cattle census	6
CHAPTER II—	
1. Building materials	8—11
2. Chemicals (reh)	11
3. Food grains	12—14
4. Hardware—	
(a) Brass manufacture	14
(b) Trunk	15
5. Leather—	
(i) Hides	16
(ii) Skins	17
(iii) Bones	<i>ib.</i>
(iv) Horns	<i>ib.</i>
(v) Tallow	18
6. Miscellaneous—	
(a) Fishing	<i>ib.</i>
(b) Jail industries	19
7. Oils	21
8. Textiles—	
A. Cotton—	
(i) Hand-loom weaving	21—26
(ii) Durrie weaving	26
(iii) Cloth printing	27—30
B. Wool	30
9. Wood work	31—32

CONTENTS.

	<i>Page.</i>
CHAPTER III.—(Industrial possibilities)—	
(1) Oil mill	33
(2) Rice hulling	<i>ib.</i>
(3) Sawing	<i>ib.</i>
(4) Spinning mill	<i>ib.</i>
(5) Leather tanning	34
CHAPTER IV.—(Statistics)—	
1. Lime manufacture	35
2. Brick manufacture	<i>ib.</i>
3. Bell metal industry	<i>ib.</i>
4. Steel trunk manufacture	36
5. Wheat milling	<i>ib.</i>
6. Hand-loom weaving	<i>ib.</i>
7. Durrie weaving	<i>ib.</i>
8. Cloth printing	37
9. Wood work	<i>ib.</i>
10. Statement showing the capital invested in the machinery of the flour mills	38
CHAPTER V.—(Directory)—	
1. Banks	39
2. Limes factories	<i>ib.</i>
3. Cloth printing factories... ..	<i>ib.</i>
4. Flour mills	40
5. Wood cash box manufacturers	<i>ib.</i>
CHAPTER VI.—(Miscellaneous)—	
1. Note on dyeing and printing trades in Tanda ..	41—42
Bibliography	42

FOREWORD.

FYZABAD district is more agricultural than industrial, but it has always been famous for Tanda jamdani and doria and for the production of several other kinds of cloth in eastern tahsils. Ajodhya produces phul utensils, and artistic wooden cash boxes are made in Fyzabad city. Among small factories (*karkhanas*) sugar refining is most prominent in the city, and the growing industry of steel trunk manufacture is noticeable. Indigo factories worked very well in the estates of the influential taluqdars, but they have now ceased to exist. Besides these, there are a few small mills working in the city—seven for wheat grinding and two for manufacture of lime and surkhi.

Among the resources of the district, oilseeds hold out great prospects for future. Although not largely produced in the Fyzabad district itself, they come in large quantities from the adjoining districts to be exported through Malipur, Akbarpur and Goshainganj, Malipur station recorded an export of over 20,000 maunds and Akbarpur about 33,000 maunds of seeds in 1921. There is a good scope for at least one power oil mill at Akbarpur. The existing flour mills should also increase their produce, if only they could find fresh markets for their products. Paddy is grown to the extent of over 3,300,000 maunds annually and much of this could be hulled in a rice mill if one is coupled to the engine of the oil factory.

There is no dearth of capital in Fyzabad, as it has two banks—the Oudh Commercial Bank and the Ajudhya Bank, both of local growth, which could easily finance a few industries. There are also a few big landed magnates and bankers who could start industries on their own account. The District Co-operative Bank could also take up the organization and financing of cottage industries with great success.

The organization of co-operative societies for the purchase of raw materials for *thattheras* will be rather difficult, and it will be advisable to gauge the public demand for them by starting credit societies in the first instance. The society can slowly introduce small mechanical appliances on easy instalment system. The trunk manufacturers are only five and too few to be organized into a society. I am afraid little help can be rendered to them until the industry expands.

Wheat is produced in large quantities, the average annual output being more than 15 and a half lakh maunds. There are flour mills in the district which could easily grind a large part of it. The local mills deserve the patronage of the cantonment authorities, especially as they are well equipped to meet the military requirements. But before this can be helped, the mills must take to grinding wheat on their own account. It is idle to expect that military authorities will purchase wheat and send it to them for grinding.

Fyzabad has all facilities for a tannery. Some 29,000 hides and about 33,000 skins are available from slaughter-houses. Tanning materials are available in abundance and there is no dearth of water. Drainage is good.

The utilisation of bone is only a question of time. Bone mills are bound to come as soon as the value of artificial manure is realised.

Fish caning and preserving will require technical knowledge but it should be possible to manufacture fish oil, manure or other minor products on a cottage basis. The processes of manufacture should be taught to the fishermen.

The main want of the wood industry is capital and sale. If the wood workers could combine with any capitalist who would advertise and adopt the modern ways of pushing sales the industry will improve in no time.

Besides being a centre for weaving of both coarse and fine cloths, Tanda is an important centre for cloth printing. That school shall, therefore, be useful there which will combine instruction in weaving with that in cloth printing. It shall be able to introduce new designs, and to suggest and popularize the use

of improved mechanical appliances and processes in both weaving and printing of cloths. Tanda ought to be able to produce cloth which it uses for printing and to the extent to which it requires it. It should be able to make its own blocks, and these also of improved patterns and designs. The printers want instruction in manipulation of synthetic and vegetable dyes. The school should be able to teach the improved finishing and preliminary processes of weaving. It should be able to give practical demonstrations of these. It should with this end have a well equipped demonstration factory attached to it.

A co-operative store is also wanted to supply cheap raw materials to the weavers and printers. But it is very doubtful whether it can take up the work of the sale of finished products in the present condition of the goods varying in quality and design with every piece. Fly-shuttles ought to be popular with the weavers of coarse cloths, as they will increase production and therefore wages, and I think time is not distant when weavers will adopt them as they come to perceive their advantages over the ordinary looms. Demonstration of these looms should be taken up by some enterprising firm of manufacturers in co-operation with Government.

Large quantities of logs of wood can be easily brought from the forests to Fyzabad through the Ghagra, just as they are brought to Bahramghat in the Bara Banki district and Fyzabad should have a sawmill of the Bahramghat type. It is an expanding city and as it consumes large quantities of building materials, it must require timber also in considerable quantities. It is well connected with other big cities like Benares and Lucknow and can easily export sawn timber. A sawmill can be combined with the oil mill as a side activity when seeds are not pressed.

Fyzabad is an important city of Oudh and has in it the important place of pilgrimage—Ajodhiya. Lakhs of people visit the place every year from all over India, and if it were to attempt organization, it can develop quickly into a first grade industrial centre. It ought to have a good stall for exhibiting its main products, preferably in Ajodhiya.

The report is a record of the export of all the district raw products to the detriment of its industries. It throws out a few suggestions for the improvement of the industries such as could suggest themselves to a man who has had acquaintance with the district for a couple of months only. They must be taken as suggestions for further investigation by people who wish to launch on new industries or try to improve the existing ones. The report attempts to locate the raw products and labour and to bring the extant monographs up-to-date in addition to collecting information for a future provincial compilation of industrial hand-book.

Attached to the report will be found a note by Mr. H. B. Shroff, Principal of the Government School of Dyeing and Printing, Cawnpore, on printing at Tanda, and I am indebted to him for it, as also to Mr. S. T. Gadre, Industrial Chemist to Government, for his making many useful suggestions and improving the report in many respects.

Thanks are also due to the following gentlemen for rendering help to the Superintendent in the difficult task of collecting information :—

- (1) B. Triloki Nath Kapoor, Tanda.
- (2) Pandit Visheshar Nath Haugal, Akbarpur.
- (3) Bhaiya Kandhai Parshad, Akbarpur.

CHAMPA RAM MISRA.

The 21st December, 1922.

CHAPTER I.

INTRODUCTION.

1.—Features of the district.

(a) *General.*—Fyzabad district, in shape a fairly regular parallelogram, lies in the north-east of the province of Oudh. It consists of a level plain of generally uniform character. The only exceptions are caused by the various streams and drainage channels and the scattered area of alluvial lands in the bed of river Ghagra called Manjhas. Beyond this lies a flat open country containing wide expanse of cultivation and thickly dotted inhabited sites with their adjacent groves of mango and mahua, small lakes and numerous patches of dhak jungles; usar patches also appear here and there particularly in the southern part of pargana Akbarpur and to a less extent throughout the Akbarpur and Tanda tahsils.

(b) *Boundaries*—

North.—The river Ghagra.

South and south-west.—Sultanpur district, rivers Majhoi and Gomti.

West.—Bara Banki district,

East.—Azamgarh district.

(c) *Area.*—The total area of the district is 1,732 square miles.

(d) *Rivers.*—There are only three rivers of note—the Ghagra in the north, the Tons in the centre and south-east and the Gomti in the south-west all of which eventually lead into the Ganges. Others are small affluents of these and are mostly insignificant, but are used for irrigation purposes.

The Ghagra is navigable throughout its length in the district. In the former years it was very extensively used and for some time successfully competed with the railway. Even now all the

turmeric used in Tanda printing comes from Bengal by boats and the river brings almost all the wood in the shape of logs from the jungle. The only other navigable river is Tons. But in summer season it almost goes dry.

(e) *Jhils*.—Besides the rivers, isolated jhils, in some cases of considerable size, occur in all parts of the district.

(f) *Forests and jungle produce*.—Jungle tracts mostly consist of patches of dhak trees; the wood of these is cut periodically and sold for fuel. Along the Tons from Akbarpur to Samanpur exist a fair amount of scattered babul jungles. Manjha lands along the Ghagra river are in places covered with dense jhan or tamarisk. In the groves the mangoe and the mahua are to be seen in large numbers, and bamboos too are very common and are to be found near every village and hamlet. The leaves and branches of dhak tree and other grasses are used as fuel in sugar refineries and tamarisk extensively for the same purpose in Fyzabad City. The latter is also employed for thatching and basket work.

2.—Population.

The total number of inhabitants in the year 1922 was 6,646,362.

3.—Ferries.

River.			Name of ferry.
Ghagra	...	...	Miranghat.
Do.	...	..	Ajodhyaghat.
Do.	...	...	Tihuraghat.
Do.	...	...	Bilharghat.
Do.	...	...	Sihora.
Do.	...	...	Dhemuaghat.
Do.	...	...	Sarwa.
Marha	...	...	Goshainganj.
Tons	...	...	Jalalpur.
Ghagra	...	...	Mahripur.
Do.	...	...	Tanda.
Do.	...	...	Naurahni.
Do.	...	...	Chahora.

River.	Name of ferry.
Ghagra	Mansurganj.
Do.	Chandipur.
Do.	Kamharia.
Gumti	Mohanghat.
Do.	Sathan.
Do	Koudwa.

4.—Roads

A.—Provincial—

1. Fyzabad, Bara Banki and Lucknow.
2. Fyzabad, Sultanpur and Allahabad.
3. Fyzabad, Basti and Gorakhpur.

B.—Local.—First class roads, metalled, bridged and drained throughout:—

1. Fyzabad to Rae Bareli.
2. Fyzabad to Jaunpur.
3. Akbarpur to Tanda.
4. Malipur to Jalalpur.
5. Akbarpur to Baskhari and Jehangirganj.

C.—Second class roads, unmetalled, partially bridged and drained:—

1. Fyzabad to Shahganj and Isauli.
2. Fyzabad to Maya and Azamgarh.
3. Mubarakpur to Surhurpur.
4. Shahzadpur to Dostpur.

D.—Fifth class roads, cleared, partially bridged and drained:—

1. Akbarpur to Iltifatganj.
2. Baskhari to Jalalpur.
3. Jalalpur to Abraula.
4. Jalalpur to Ramnagar and Chahora.
5. Haswar to Mansurganj.
6. Maharua to Bikwajitpur.
7. Bhati to Maya.
8. Bilharghat to Tarun.
9. Darshannagar to Rasulabad.

10. Darshannagar to Bharatkund.
11. Bhadarsa to Tewaripur.
12. Khajurahat to Milkipur.

E.—The rest are :—

1. Amaniganj to Milkipur.
2. Amaniganj to Haliapur.
3. Gaddopur to Kuchera and Jalalpur.
4. Haringtonganj to Kinawan and Chaura.
5. Bhiti to Dostpur.
6. Akbarpur to Gauhanian.
7. Shahzadpur to Jalalpur.
8. Suchitaganj to Mathia.

5.— Railways.

Loop Line.	Important stations.
1. Oudh and Rohilkhand Railway, Loop Line.	Baragaon, Sohawal, Fyzabad, Fyzabad city, Ajodhiya, Goshaignanj, Akbarpur, Milkipur.
2. Oudh and Rohilkhand Railway, Fyzabad-Allahabad Branch.	Bharat Kund, Masodha, Malethi, Kanak, Khajurhat.
3. Oudh and Rohilkhand Railway, Akbarpur-Tanda Branch.	Akbarpur, Surapur, Tanda.
4. Bengal and North-Western Railway.	Begins from Ajodhiyaghat (Lakarmandi) and goes northward to Gonda.

6.— Markets.

Town or village.	Name of basar.	Market days.
Kurha Keshopur	Darshannagar	... Monday and Friday.
Bhadarsa	... Bhadarsa	... Ditto.
Mau Jadbanspur	Mau ..	... Tuesday and Friday.
Narainpur	... Narainpur	... Tuesday and Saturday.
Sathri	... Rani Bazar	... Wednesday and Saturday.

Town or village.	Name of bazar.	Market days.
Jalaluddinnagar	Pura	... Sunday and Wednesday.
Mangalsi	... Masumganj	... Ditto.
Katrauli	... Maharajganj	... Ditto.
Muia Kapurpur	Begamganj	... Ditto.
Deorakot	... Mubarakganj	... Ditto.
Maholi	... Muhammadpur	... Ditto.
Mustafabad	... Baragaon	... Tuesday and Friday.
Jalalabad	... Jalalabad	... Ditto.
Kundarkha Khurd	Deorhi Hindu Singh.	Ditto.
Jaganpur	... Jaganpur	... Ditto.

7.—Fairs.

Locality.	Name of fair.	Date.
Ajodhiya	... Rath Jatra	... <i>Asarh sudi</i> 2nd.
Ditto	... Bashistkund	... <i>Bhadon sudi</i> 5th.
Ditto	... Lachhmangah	... <i>Sawan sudi</i> 5th.
Ditto	... Jhula...	... <i>Sawan sudi</i> 3rd to 15th.
Ditto	... Kartiki Ashnan	... <i>Kartik sudi</i> 15th.
Ditto	... Ramnaumi	... <i>Chait sudi</i> 9th.
Ditto	... Parikrama	... <i>Kartik sudi</i> 9th.
Fyzabad	... Janamashtami	... <i>Bhadon sudi</i> 8th to 14th.
Ditto	... Ramlila	... <i>Kuar sudi</i> 1st to 15th.
Ditto	near Id-uz-zuha	... <i>Ziqad</i> 10th.
Museum.		
Ditto	... Id-ul-Fitr	... <i>Shawal</i> 1st.
Qazipur	... Maniparbat	... <i>Sawan sudi</i> 3rd.
Deokali	.. Athen	... <i>Chait badi</i> 8th.
Jamtharaghat	... Jamdutiya	... <i>Kartik sudi</i> 2nd.
Ritiya Maharaj- ganj.	Gudara	... <i>Chait</i> .
Kurha Keshopur	Surajkund	... Sunday after <i>Bhadon sudi</i> .
Nandgram	... Bharatkund	... Every <i>Somwari amawas</i> .
Babupur Sirsa	... Nahau Tilai	... <i>Bhadon sudi</i> .
Sarwa	... Singi Rikh	... <i>Chait sudi</i> 9th and <i>Kar- tik sudi</i> 15th.

Locality.	Name of fair.	Date.
Dilasiganj ...	Ramghat ...	<i>Chait sudi</i> 9th and <i>Kartik sudi</i> 15th.
[Goshainganj ...	Jhula ...	<i>Sawan sudi</i> 11th to 15th.
Daulatpur ...	Nahan Sangam ...	<i>Pus badi</i> 15th.
Akbarpur ...	Jaunpuri ..	<i>Jeth badi</i> 2nd.
Malipur ...	Ramlila ...	<i>Kuar sudi</i> 10th and 15th.
Pahtipur ...	Ditto ...	<i>Kuar sudi</i> 1st to 15th.
Mansapur ...	Ashnan ...	<i>Kartik badi</i> 15th and <i>Chait sudi</i> 9th.
Chhitauni ...	Ashnan Sarwan- chhetra.	<i>Aghan sudi</i> 15th.
Udai Chandpur...	Ashnan Jamdutiya	<i>Kartik sudi</i> 2nd.
Dilawarpur ...	Ashnan Gyan Tatti	<i>Kuar</i> and <i>Chait sudi</i> 15th.
Jalalpur ...	Bijai Dasmi ...	<i>Kuar sudi</i> 3rd to 11th.
Bhiaoan ...	Miran Saheb ...	<i>Kartik sudi</i> 11th to <i>Aghan badi</i> 15th.
Dandwa ...	Muharram ...	<i>Muharram</i> 10th.
Tanda ...	Ashnan Kartiki ...	<i>Kartik sudi</i> 15th.
Do. ...	Ramlila ...	<i>Kuar sudi</i> 10th.
Asopur ...	Barun Shahid ...	First Sunday of <i>Bhadon</i> .
Ditto ...	Saiyid Salar ...	<i>Jeth badi</i> 1st.
Rasulpur Dargah	Makhdum Sahib ...	<i>Kartik sudi</i> 15th to <i>Aghan sudi</i> 15th.
Haswar ...	Babla... ...	<i>Kartik badi amawas</i> to <i>sudi</i> 2nd.
Ahrauli ...	Gobind Sahib ...	<i>Aghan sudi</i> 10th to 15th.
Chahora ...	Sheoji ...	<i>Phagun badi</i> 13th.
Khapradih ...	Ram Biah ...	<i>Aghan sudi</i> 5th.
Deogaon ...	Shiam Sundar ...	<i>Pus sudi</i> 7th to 15th.

8.—Cattle Census, 1921.

1. Bullocks...	...	...	...	328,272
2. Cows ...	...	...	...	137,288
3. Calves ...	...	...	...	154,311
4. Buffaloes	...	...	...	6,262

FYZABAD DISTRICT.

7.

5. She-buffaloes	...	...	...	83,887
6. Calves ...	...	...	...	71,214
7. Sheep ...	...	...	...	47,165
8. Goats ...	...	...	...	38,582
9. Horses ...	...	...	...	4,096
10. Mares ...	...	...	...	2,923
11. Mules ...	...	...	...	52
12. Donkeys...	...	...	...	3,479

CHAPTER II.

DESCRIPTION OF AND SUGGESTIONS FOR THE IMPROVEMENT
OF THE VARIOUS DISTRICT INDUSTRIES.

1.—Building materials.

(a) Brick kilns.

Bricks have to be made locally on account of the transport difficulties. The running of a brick kiln does not require much capital, nor very skilled labour. Fyzabad has 15 kilns. Of these five are at Deokali near Fyzabad City and four at Ranupali, between Ajodhiya and Fyzabad. These supply the needs of Fyzabad and Ajodhiya. The rest are all situated east of Ajodhiya and supply bricks to Darshannagar, Goshainganj, Akbarpur, Mubarakpore, etc. The kilns can work only 8 months in the year and have to stop work during the rains.

Raw material.—Royalty for good earth free from grit is paid at the rate of Rs. 250 to Rs. 300 per bigha. Earth is dug to a uniform depth of 3 yards. Wood for burning bricks is ordinarily brought from the jungles in the neighbourhood or from the Tikri forest near Lakarmandi Ghat in Gonda district, and is paid at the rate of 1½ maunds for a rupee.

Capital.—A kiln requires Rs. 5,000 as working capital besides the money which will be permanently invested in land and purchase of chimneys.

Labour.—The kilns give employment to about 400 men, of which 15 are skilled. Each factory has a head mistry and 20 to 25 moulders and 8 coolies. Some keep a munshi (accountant) also and a chaukidar. Moulders get Re. 1-8 per thousand bricks, mistry Rs. 20 to Rs. 25 monthly, and coolies Rs. 12 to Rs. 15 a month. Accountant has to be paid Rs. 15 to Rs. 20 and the chaukidar Rs. 7 to Rs. 8 a month.

Outturn.—The 15 kilns turn out about 7,500,000 bricks annually.

Price.—Bricks are sold at 1st class Rs. 15 per thousand; 2nd class, Rs. 12, and 3rd class, Rs. 9 per thousand. If Rs. 13 be taken as the average, the value of the total outturn comes to Rs. 97,000.

(b) *Kankar.*

Kankar occurs both in the nodular and block forms and is abundantly found in almost all parts of the district, specially in the neighbourhood of usar lands. It is found in layers about 8 inches below the surface and is used for road metalling and building as well as for the manufacture of lime. First class kankar has now been completely exhausted within a 10-mile circumference of Fyzabad City, but it is still found along the following roads:—

	<i>Price.</i>
(i) Cawnpore-Lucknow-Fyzabad Road ...	Rs. 8-4 to Rs. 9-11
	per 100 c. ft. land- ed on roadside.
(a) Niwazpur ... 8 miles.	
(b) Chakore ... 8 "	
(c) Sunahma ... 7½ "	
(d) Bhaipur ... 9 "	
(e) Rajjanpur ... 9 "	
(ii) Fyza' ad-Basti-Gorakhpur Road ...	Rs. 9-7 to Rs. 10-4
(a) Rajjanpur ... 11 miles.	
(b) Marha Bank beyond Karma village ... 12½ "	
(iii) Allahabad-Sultanpur-Fyzabad Road	Rs. 6-1 to Rs. 9-7.
(a) Narainpore ... 4 miles.	
(b) Sarai Bhanauli ... 4½ "	
(c) Nowanwa Bidra ... 3½ "	
(iv) Akbarpore-Bashkhari-Kamariaghat Road ...	... Rs. 6-10 to Rs. 10-3.
(a) Darbia ... 9 miles	
(b) Ithia ... 6 "	
(c) Bukhia ... 3½ "	
(d) Pipra ... 3 "	

	Price.
(v) Tanda-Akbarpore Road ...	Rs. 9-3 to Rs. 12.
(a) Mujahidpur ... 8 miles.	
(b) Darhia ... 8 "	
(vi) Malipore-Jalalpur Road ...	Rs. 6-12 to Rs. 7-8.
(a) Ithia ... 4 miles.	
(b) Chamrupur ... 5 "	
(vii) Fyzabad-Jaunpur Road ...	Rs. 6-5 to Rs. 9-2.
(a) Rajjanpur ... 11 miles.	
(b) Marha Hank ... 4½ "	
(c) Rasulabad Bansa ... 5 "	
(d) Dhampur Chaurari ... 4½ "	
(e) Kanakpur ... 4½ "	
(f) Narshingh Bhan Jaitpur ... 4 "	
(viii) Fyzabad-Rae Bareli Road ...	Rs. 6-10 to Rs. 8-9.
(a) Dasauli Rajjanpur ... 4½ miles.	

The beds are generally 4-6 feet deep. Kankar is dug up by contractors and is supplied either to the Public Works department or to the owners of the local lime factory. The latter buy kankar at the rate of Rs. 4 to Rs. 12 per 100 c. ft. Public Works department pays as follows per 100 c. ft. :-

Digging : Rs. 2-4 to Rs. 2-8 per 100 c. ft.

Stacking : 8 annas.

Royalty : 4 "

Carriage : Re. 1-4 for the first mile, 12 annas for the second and third mile and 8 annas fourth and subsequent mile.

(c) *Lime manufacture.*

There is a great demand for lime in Fyzabad for building purposes. The town has four mills, but one is idle. The remaining three belong to—

(1) M. Muhammad Ismail.

(2) Pandit Sheo Narain.

(3) Municipal Board which has leased it to Babu Ram Lal.

The first is known for his good lime, but the second has a better sale. The third caters for the needs of the municipality. The first has an invested capital of Rs. 10,000, the second about Rs. 8,000 and the third Rs. 5,000. In addition to this each mill has a working capital of about Rs. 1,000.

Raw material.—Kankar is found in abundance all over the district and is carted to the town. It costs Rs. 4-8 to Rs. 12 per 100 c. ft. The mills consume 400 maunds each daily or 540,000 c. ft. annually.

Labour.—Each firm has to keep an accountant on Rs. 20 to Rs. 25 per mensem, an engine driver or mistry on Rs. 30, two assistants on Rs. 15 each and 20 labourers on Rs. 7 to Rs. 8 each. Total establishment charges of a mill come to Rs. 200 per month.

Outturn.—Mills turn out about 108,000 c. ft. of lime in a year worth Rs. 80,000.

Price.—Lime sells at Rs. 90 per 300 c. ft.

Mechanical appliances.—Oil-engines (cost Rs. 4,000 to Rs. 9,000 each) and a grinding mill (cost about Rs. 1,000).

(d) Tiles.

Country tiles are made of the ordinary quality. There is room for a capitalist to take up the work of making tiles of the Frizzoni pattern, or resembling those of Messrs. Burn and Company, Raniganj.

2.—Chemicals.

Reh—There is no *reh* of any importance in this district. It is found in some very small patches of use in Akbarpur and Tanda tahsils, but the quantity is so small that the local dealer prefers to get it either from Partabgarh and Allahabad or from Azamgarh and Jaunpur. *Reh* is used by dhobis only, though formerly it was used in the city in the manufacture of glass for bangles.

3.—Food grains.

Statement showing acreage, outturn and total produce of some of the main crops of Fyzabad district in 1921-22.

Year.	Crop.	Area in acres.	Average outturn in maunds.	Total produce in maunds.	Remarks.
1921-1922.	Rice ..	267,309	Per acre. 12½	3,341,362	Highest acreage in Bikapur and Akbarpur tahsils.
	Sugarcane ..	93,146	32½ of gur	1,372,245 gur.	It is grown to a great extent in Akbarpur tahsil.
	Indigo ..	5,354	½	1,338	23 factories employing 3,300 men. Highest acreage in Akbarpur tahsil. Prices are for <i>kachcha</i> Rs. 60 and for <i>pucca</i> Rs. 475 a maund.
	Arhar and mixed arhar.	27,602	10½	11,949	
	Sasai (sann hemp).	3,133	7½	23,497	
	Urd and mung	26,306	..	..
	Maize ..	25,359	..	..
	Wheat ..	130,151	12	1,563,012	Chiefly grown in Bikapur, Akbarpur and Fyzabad tahsils.
	Barley ..	33,275	10	332,750	Mostly in Akbarpur and Tanda tahsils.
	Peas ..	112,417	12½	1,405,212	Largely grown in Akbarpur after dhan.
	Tobacco ..	398	10	3,980	In Haveli pargana, cities of Fyzabad and Ajodhiya. Large amounts are still imported from Behar.
	Gram ..	37,907	12	454,884	
	Linseed ..	727	6½	4,544	
	Ground-nut ..	89	9	801	
Potato ..	7,192	..	..

Wheat grinding.

Wheat is the chief *rabi* crop of the district. The total area under cultivation is 130,151 acres and the annual outturn at the rate of 12 maunds per acre is 1,561,812 maunds. Power

grinding of wheat began with the regular and continuous demand of wheat flour for the troops stationed in Fyzabad. At present there are seven flour mills in Fyzabad city and two in Ajodhiya. One of the latter has stopped working as the demand has diminished with the recent withdrawal of the abovementioned patronage.

Raw material.—Wheat is largely available in the city itself, where there are two big grain markets at Sahebganj and Fatehganj. A large quantity also comes from Gonda district, where there is a big grain market at Nawabganj, lying on the other side of the river Ghagra opposite Ajodhiya, some 12 miles north of Lakarmandi Ghat. Each mill on the average consumes 30 maunds a day of wheat and their annual consumption is estimated to be about 87,000 maunds valued at Rs. 5,65,000.

Capital.—The total fixed capital originally invested in the flour mills was about Rs. 26,000. Floating capital required for running them is not much. Establishment in a mill ordinarily includes one munim, one mistry, two assistants and a few labourers, and the monthly expense on establishment comes to Rs. 175. Each firm engages one accountant and two assistants at Rs. 15 each.

Labour.—In all there are about 90 persons engaged in the industry.

Outturn.—The annual outturn is estimated to be 85,369 maunds.

Marketing system.—The firms do no business of their own. They work on commission and charge six annas a maund. The rate is uniform in all the mills.

Mechanical appliances.—Two mills are equipped with oil-engines, having 24 H. P. each and costing Rs. 5,000 each. The rest have engines with 12 to 18 H. P. each costing Rs. 2,000 to Rs. 3,000. Grinding mills cost about Rs. 1,000 each.

Suggestions.—There is not enough work for so many mills and they are equipped with engines of higher power than their actual requirements. Both together result in wastage of power and high cost of working. Subsidiary work like surkhi or lime manufacture should be taken up.

2. The mills ought to buy wheat, grind it and export flour.
3. Fyzabad Cantonment authorities should be requested to buy local flour instead of importing it from Lucknow.

4.—Hardware.

(a) Brass Manufactures.

Lotas and *katoras* and sometimes *ptilias* are made of bell metal (phul) by *Kaseras* who are found in small numbers throughout the district, but are concentrated in Fyzabad and Ajodhiya. Utensils are invariably made by melting old and broken utensils and casting them in earthen moulds. No foreign metal is imported. The big demand for these articles in the fairs of Ajodhiya has to be met by importing similar articles from Mirzapur and Benares. Dealers sell them at Rs. 2-8 a seer; manufacturers charge 4 annas a seer less than the dealers.

The processes of casting, filing, scouring, chiselling and polishing are the same as described in Dampier's monograph on brass.

Raw materials.—The census of 1911 returned 252 actual workers, of whom 100 live in Fyzabad and Ajodhiya. Supposing 200 out of these work in phul, the total amount of raw materials consumed in a fortnight is 400 maunds, as one man can cast 2 maunds of vessels in 15 days and spends the second fortnight in the other processes of filing, polishing, etc. The total annual requirements of the district are thus 4,800 maunds. Broken utensils are brought to the *Kaseras* from the villages in the interior by hawkers who usually exchange them for new ones or buy them at half the current prices for new articles. Old utensils are bought at Re. 1 to Re. 1-2 a seer and are supposed to give on melting a metal which takes a better finish than the imported new alloy which sells at Re. 1 to Re. 1-6 a seer.

Wages—A few poor *Kaseras* work on piece wage and charge annas 12 to Re. 1 a seer. No outside labour is engaged.

Outturn.—The outturn is calculated at the rate of $1\frac{1}{2}$ maunds of vessels manufactured out of 2 maunds of raw material. The

total production will thus be 3,600 maunds in the year worth Rs. 8,100.

Marketing system.—Dealers make advances in money and material to the manufacturers (Kaseras) and book their orders in advance. There is no resort to advertisement of any sort. The production is too small to need any pushing, it does not even meet the demand in full.

Suggestions.—The following methods suggest themselves to bring about improvements in the industry :—

1. Adoption of improved mechanical appliances :—
 - (a) Improved hand lathes for chiselling and polishing.
The hand lathe of the Madras pattern by which one coolie can turn two lathes simultaneously, producing a continuous rotary motion with the help of crank handle and a rope passing round the shaft of the lathe, is both useful and adoptable under the present condition of this industry. This will save time and labour.
 - (b) Introduction of punching machines to save the trouble of cutting with scissors.
 - (c) Introduction of better and more permanent plate-moulds. A copper pattern may be used as a mould, made in two vertical halves, the pieces being kept together by four small friction clutches.
2. The diffusion of technical and art education.
3. The adoption of improved artistic patterns and designs.
4. Starting of co-operative societies for the supply of material and sale of products.

(b) *Trunks.*

The manufacture of "steel" trunks in Fyzabad is of a very recent growth. Up till 5 years back all trunks were imported from Allahabad. They had a ready sale in the big fairs of Ajodhiya. This led the "tinwalas" to make a few trunks from the old kerosine oil tins. They were cheap and were easily sold. These people then began to buy old "steel" trunks, repair, repaint and sell them. These also were found to have a good

sale. Now new galvanized iron sheets are purchased and used for the manufacture of trunks. The work is all done by hand. The trunks are growing in popularity and are sold for 2 annas to 5 annas per inch according to the thickness of the sheet. The industry has a bright future before it.

Raw material.—Galvanized iron sheets are imported from Cawnpore by the dealers. The manufacturers buy them on credit at Rs. 25 per maund and pay back the price and interest after selling their goods. Locks of both foreign and Indian make are used, and are bought locally at 12 annas to Rs. 2-8-0 each.

Labour.—This industry gives employment to 20 men in five firms. A family is a firm. Relatives are taken as apprentices and are paid one anna to two annas per day as pocket money. Profits are divided by firms between the members. A trunk of ordinary size is made in two days.

Output.—About 1,000 trunks are made in a year. In *mela* days the work goes on day and night, otherwise the average, is $1\frac{1}{2}$ to 4 days to a trunk.

Marketing system.—No agents are kept. The highest sale is during the *mela* days when temporary shops are opened in Ajodhya.

Suggestions.—The greatest need of this industry is capital. In the interests of the manufacturers the industry should expand and the manufacturers should combine to form a co-operative society. At present they think that the rate of interest charged by the co-operative societies is exorbitant. In fact 15 per cent. interest is high for an industrialist to pay.

5.—Leather.

(i) *Hides.*—Hides and skins are mostly exported from Fyzabad, Tanda, Akbarpur and Jalalpur. The number of hides available is about 29,000 a year. A small fraction is, however, utilized at Jalalpur for making Indian shoes and some at Fyzabad for the soles of all kinds of shoes. But more than 80 per cent. is exported to Cawnpore. Raw hides are either dried in the sun or salted with *khari* and dried before export.

Slaughter-house hides are considered to be superior in quality and fetch a higher price in the market than those of dead animals. Hides are sold by weight from 3 to 4 annas per lb.

(ii) *Skins*.—The total number of skins available is 32,625. At present they are all exported to Cawnpore or to Lucknow. The present prices are Rs. 100 to Rs. 120 for 100 skins, but the market becomes dull during rainy season. The Oudh districts are supposed to produce very good goatskins especially suited for chrome tanning and glace kid leather.

(iii) *Bones*.—The number of hides and skins exported every year from the district is 29,000 and 32,625 respectively. The dead bodies of these animals at the rate of 20 seers of bones per big animal and 2½ seers per sheep or goat should yield 14,500 maunds plus 2,039 maunds, i.e., 16,539 maunds of bones. The exporters get them collected from the interior of the district by means of a permanent agency. The bones are then sent to Sealdah or Bally via M. G. S. Magarwara. Only 5 per cent. goes to the latter place and the rest to the former. There they are crushed, turned into manure and shipped to Europe. Bones are sent from every station more or less. Akbarpur sent in 1921 about 2,442 maunds and Malipur (near Jalalpur) 3,018 maunds.

There is a great scope for a few bone crushing mills in the United Provinces. The enormous quantity of bones sent out every year could be easily utilised in increasing the agricultural production of these provinces. Hand or bullock power machines would be much appreciated.

(iv) *Horns*.—Horns of 29,000 cattle are available in the district, but not much use is made of them. Buffalo horns are generally exported to Cawnpore and Sambhal. In 1921 Akbarpur exported about 250 maunds and Malipur 3,018 maunds. A large quantity is also exported from Fyzabad. In Fyzabad city about half a dozen workers make crude combs out of them and send them out to village markets for sale. There is no prospect for an increase in the demand for them. People prefer to have wooden combs, partly owing to the Hindu prejudice against horn and partly owing to the comparative

cheapness of the wooden article. There is, however, some scope for them in the cities, if their quality could be improved. Other articles such as handles for sticks, umbrellas and knives, pen-holders and buttons, can also be made out of the horns. Horn filings are used as manure for potatoes.

(v) *Tallow*—Akbarpur exported (in 1921) 100 maunds to Cawnpore, and Malipur 650 maunds. A sufficiently large quantity can be had in the district if a proper collecting agency were organized.

6.—Miscellaneous.

(a) *Fishing.*

The rivers and tanks of Fyzabad district are full of fish of the following kinds :—

- | | |
|------------|--------------|
| 1. Robi. | 6. Patra. |
| 2. Girai. | 7. Parhna. |
| 3. Tenga. | 8. Chilwa. |
| 4. Bhakur. | 9. Naini. |
| 5. Jhinga. | 10. Mahaser. |

11. Ghouch.

The first three varieties are the most delicious and have few *kantas* (bones). They sell at 5 annas a seer. Varieties 4 to 6 are more common and are used by the middle class men. They are sold at 4 annas a seer. Varieties 7 to 9 are inferior and full of bones. They are used by the poorer classes and cost 3 annas a seer. Chilwa is the smallest variety. Mahaser and Ghouch are the largest and weigh 10 seers to one maund each. Fishermen who live by catching fish alone number not less than 1,000 with their dependants. Three hundred families are directly engaged in fishing and earn Rs. 10 to Rs. 15 a month. The number is above the general average of Oudh, though below that of Gonda and Bahraich districts. Kahars, Mallahs, Guryas and Jhar Jhariyas are the fishing classes. Jhar Jhariyas are the Musalmans and have a monopoly in the city of Fyzabad, as the first three Hindu castes do not catch fish within the town boundaries. Jhar Jhariyas do not sell fish. They sell them to

the Mallahs whose females hawk them in the city. The majority of the population goes in for a fish diet when one is available and many lower castes catch fish as a subsidiary means of employment.

No close time is observed; fish are to be had in large numbers during rains and in the winter season. One man can catch 5 to 6 seers of fish in a day and earn Re. 1 to Re. 1-8.

Fish are caught by nets and lines and entrapped in various kinds of bamboo and reed baskets. *Katia* (hooks) are bought in the market; nets and baskets are made by the fishermen themselves. Fish are never lanced or shot. It is not customary to catch fish by spreading big nets between two or more boats as is the custom in Allahabad. Perhaps the Ghagra is a more ferocious river and unsuited for this purpose. No means are employed for the culture of fish and no sanctuaries are established for their protection and revival. The bigger varieties live on the smaller. Fish is available in abundance and could be exported if it could be canned or preserved. This is only possible if technical education and capital could be brought into the industry by co-operation.

(b) Jail Industries.

(1) ALOE FIBRE

Raw material.—It grows in abundance on either side of the railway lines. A lease has to be taken for gathering the leaves for which the Railway department charges Rs. 2 per mile per month. The charges for collection and transport are Rs. 15 for 100 maunds. The 100 maunds of leaves yield about 1½ maunds of fibre.

Manufacture.—Out of these fibres rope, sutli and mats are made. Everything is done by hand and no machinery is said to be used. Ropes are sold at Rs. 15 a maund, sutli at the same rate and mats at Re. 1 a square yard.

Loss in the process of manufacture is allowed to an extent of 12 to 15 per cent.

(2) JHAU OR TAMARISK.

Raw materials.—Jhau grows in abundance in Manjha and can be had very easily here. It is sold at 10 bundles per rupee.

Manufacture.—Baskets of different sizes—small, medium and big—are made out of it. Their prices depend on their sizes. Small are sold at 1½ annas each, medium 2 annas and big 4 annas each.

(3) MUNJ.

Raw material.—Munj is a fibre found throughout the district. It grows rapidly and abounds in sandy soils and near lakes and rivers. Munj is popular with the cultivator, as it is easily collected and needs no looking after. Bundles are cut and stored by for the slack season, when the spathes are beaten with a wooden mallet to extract the fibre. The jail buys it at Rs. 4 a maund.

Manufacture.—The fibre is twisted into strong ropes which withstand moisture wonderfully well. *Ban* (string) is very largely used for charpoys (beds). Munj matting is said to be proof against the white-ants, but uncomfortable for the feet. *Ban* is sold at Rs. 8 a maund and munj matting at 12 annas a square yard.

(4) HEMP FIBRE.

Raw material.—Hemp is locally available. It is grown in an area of about 3,133 acres, mostly in Tanda tahsil (pargana Sultanpur).

Manufacture.—Only ropes are made out of hemp and are sold at Rs. 15 a maund. A loss of 5 per cent. is allowed in rope making. Tat is not woven in the jail.

(5) TEXTILE.

Raw material.—Only yarn of 10 counts is used for all sorts of manufactures. It is imported from Cawnpore. Last time Muir Mills supplied it at Rs. 9-2 per bundle of 10 lbs. each.

Manufacture.—Carpets, durries, dusters, dosuti and newar are made. Their rates for sale are : carpets, Rs. 3-8-0 a seer, durries, Rs. 3 to Rs. 3-8-0 a seer; dusters (2½ sq. ft.) Rs. 7-8-0

a dozen; dosuties for clothing (28" wide) at annas 10 a yard; newar, Rs. 3 a seer. Besides these, cotton bags for keeping cash are also made here. The bigger ones are sold at 12 annas each and the smaller at 8 annas each.

(6) OTHER INDUSTRIES.

Bamboo chiks—Are also made and sold at 2 annas per square foot.

Mustard oil—Is expressed for jail consumption. Seeds are bought in the local market at 5 to 6 seers for a rupee.

7.—Oils.

No authentic record of mahua trees is available. Various estimates have been given varying from 20,000 trees to 50,000. I take 30,000 trees to be the approximate number. Each tree is said to yield about 3½ maunds of fruits, out of the kernel of which is expressed an oil of undetected potentiality and rancid taste. It is mostly used by the poor for burning or cooking purposes. When refined it gives a yellowish odourless transparent oil which solidifies to a white substance quite resembling *ghes*. It is thus used as an adulterant for *ghes*.

Possibility.—A mahua tree yields 2 to 4 maunds flowers, and as the district has no less than 30,000 trees, the total yield of flowers is about 100,000 maunds.

Alcohol is distilled out of the flowers, and the industry has a great future before it, as there is every hope of power alcohol being distilled out of the flowers.

8.—Textiles.

(A) COTTON.

(1) *Hand-loom Weaving.*

There are no cotton mills in the Fyzabad district. The chief centres of hand-loom weaving are Tanda, Jalalpur, Iltifatganj, Bholepore, Naraon and Akbarpur. Other smaller centres where this industry is carried on to a certain extent are Mubarkpur, Baskhari, Kichhauchha, Sultanpur, Lorepur, Mustafabad (near

Baragaon), Amaniganj (in Bikapur tahsil) and Fyzabad. The following is an approximate number of hand-looms in each tahsil :—

(1) Tanda tahsil ...	...	...	2,600
(2) Akbarpur tahsil...	...	...	2,615
(3) Fyzabad tahsil ...	...	...	175
(4) Bikapur tahsil ...	...	...	25
			Total ... 5,415

Greys, checks, gabruns, chautahi and jamdani are the different kinds of cloth woven in the district. Different kinds of cloth are produced by using yarn of different counts and colours, and by manufacturing them on a single or a larger number of pairs of heddles. Jamdani is produced by specially interweaving yarn on a set system as the weaving of the fabric proceeds.

Amongst greys, garha and gazi are usually woven from yarn of 16 to 18 counts imported from Cawnpore mills. Occasionally hand spun yarn is used both in warps and wefts or in weft alone, but hand spun yarn is not available in large quantities, is uneven and frequently snaps on the loom. Garha of 24 and upwards picks per inch is made and sells for 4 annas to Re. 1 per yard according to its width and quality. The recent swadeshi and the khaddar movements have given the weaving of garha a special impetus. Even the weavers of fine cloths have taken to garha weaving on account of a great demand for it.

Nainsukh, tanzeb, pagris and dhoties are also woven at Tanda from imported foreign yarn of 100^s and counts above 100.

Checks.—These comprise cloth for *saris, langus, pyjamas, kurtas* usually made of 18^s and sold for 8 annas to Re. 1 per yard according to width, design and quality. They contain 24 and upwards picks to an inch. The important designs are girants made from dyed yarn of 40^s to 60^s mostly for export to Nepal and Tarai district. Dorias (striped cloths), charkhanas

(checks), gabrun, susi and tapti (both striped and check), dosuti (material in which double yarn is used in both warps and wefts), bed sheets and bed spreads. Doria dosuti is a corded check having a thick cord of 10 to 12 strands of yarn both in warps and wefts at regular intervals. Sozni is distinguished from doria dosuti in having cords in the wefts only.

Patterns requiring use of more than one pair of heddles: charkhana and gabrun come under this class. Dotahis and chautahis with 30 double threads in the warp and about the same number in the picks to one inch are used as bed covers. Sangi with warp of one colour and wefts of several colours has the designs worked on one side only. But the special cloth for which Tanda is famous is the jamdani. It is woven with yarn of 150^s to 200^s and resembles tanzeb in texture, but is figured and damasked. Ten kinds of jamdani are woven, varying in quality and design. The best is called pench and costs Rs. 300 a than (piece). It has an admixture of silk in it. A than used to be 10 yards \times 30^s but it is now 3 $\frac{1}{2}$ yards \times 30^s only. Other patterns are khara bel barik costing Rs. 145 a than. Khara bel marqa and chand tara cost even less. Jamdani cap borders are no longer woven. The demand for these costly fabrics has now diminished very much. Tanda has only 11 looms giving employment to 28 weavers. Their total outturn is worth Rs. 7,000 a year. Jamdani is sold in the market for export to Lucknow and Bara Banki. Its consumption is mostly confined to the taluqdars and not often the weavers have to take their goods to the taluqdars and other monied men of places like Rudauli and Gandara (Bahraich).

Lungis, saris, dhotis, dhani, sangi, safas, towels, handkerchiefs and other cloths of average quality are woven in Tanda and other centres of hand-loom industry from counts 18 to 34 for use of middle class people. Cloths for *kurtas* and coats are also woven.

Silk fabrics are woven at Tanda, Akbarpur and Fyzabad. Silk is imported from Benares and Bengal and cloths of good design are made, but exorbitant prices are demanded for them. With even a slight alteration in texture, design or workmanship.

the weavers double the price resulting in reduced sales. Two small factories for weaving silk have recently been started in Fyzabad and Ajodhiya. Their designs are good, but the prices are high.

About 450 fly-shuttle looms are in use in the district. Most of them are at Bholepur and Itifatganj—the former 12 miles west and the latter 10 miles east of Tanda, where they have been introduced recently. A few Julahas migrated to Mylapur in Bombay Presidency and used fly-shuttle looms there. They introduced them in their own places on return and their example has been followed by others. Fly-shuttles are imported from Azamgarh and other places.

Warping frames of Bara Banki pattern were seen in use at Bholepur.

Yarn.—The district consumes over 19,000 maunds of yarn every year and the counts vary from 150^s to 200^s required for jamdani to 30^s and 40^s required for dorias and checks and 10^s and 12^s for weaving garbas or gazi. Ahmedabad supplies 30^s and 40^s, Indore 20^s to 30^s and Cawnpore below 20^s. Yarn of higher counts than 40^s is foreign. Double yarn is rarely used. Tanda alone imported 10,203 maunds in 1920-21. Akbarpur 4,789 maunds and Malipur 3,555 maunds. Prices of yarn range from Rs. 9-2-0 a bundle of 10 lbs. for 10^s, Rs. 10-10-0 a bundle for 16½^s to Rs. 11-8-0 for 18½^s. Yarn of 16½ to 18½ counts is mostly used and the cost of yarn consumed in the district in a year would be Rs. 2,00,000. Some hand spun yarn is also used. Bhaskari riots sent a large number of men to jail and their women have taken to spinning by hand. The non-co-operation movement has created a demand for hand spun yarn. One woman can spin 4 to 6 chhataks a day, and gets 3 annas to 4 annas a seer. Charkhas are scattered throughout the district and their exact number can only be known by taking a census. Various estimates were given to me about charkhas, but 13,370 charkhas in the district is a fair approximation. Taking an average of 2 chhataks a charkha per day (as spinning is done in leisure hours only) their total production comes to 15,480 maunds in a year. It is mostly consumed by the spinners themselves,

though high prices, now obtained for it, have induced people to take it to the markets for sale.

Labour.—There are 5,415 looms working in the Fyzabad district, Tanda tahsil having 2,600 and Akbarpur a little over 2,600. Out of these only 450 are fly-shuttle. Weaving gives employment to about 16,500 souls. Women and children help in preliminary processes, though, with the introduction of fly-shuttle looms, boys are also employed in weaving. Weaving is carried on mostly by Musalman Julahas, though at places Koris and Chamars are also working either as hired labourers or on their own account. Yarn is purchased in open market from the dealers who regulate their prices by the Cawnpore market rates and by the stock of yarn in hand. A co-operative store is a great necessity. Yarn is often bought on credit, but the cloth produced from it is not necessarily sold to the person who advances the yarn.

Wages.—Outside labour is very rarely employed for weaving, but where it is, it is paid at the rate of one anna a yard for weaving garha on a fly-shuttle loom. In Akbarpur and Lorepur dhotis are woven at the rate of three pairs for Rs. 5, i.e., 72 yards for Rs. 5. The loom owning weavers do not like a piece wage payment, and enquiries show that they would not charge less than Rs. 2 for a than of 12 yards, i.e., 2 annas 9 pies per yard, if they at all agreed to weave on a piece wage system. A than of 12 yards garha would sell for Rs. 6 and would cost Rs. 4-8-0 to manufacture. A weaver thus gets Re. 1-8-0 for weaving 12 yards, i.e., 2 annas a yard. Dorias and others are charged 4 annas a yard. There is a prejudice against fly-shuttle looms as some believe that over-production will diminish wages and others think that fly-shuttle is not suited to the finer counts. Artistic designs like jamdani, etc., will in any case have to be worked on throw shuttle looms.

Production—At the rate of 112 lbs. of cloth to every 110 lbs. of yarn (which is the rate accepted by the Millowners' Association of Bombay) the total production of the Fyzabad district would come to 19,345 maunds. The chief centres of export are Lucknow, Allahabad, Benares, Cawnpore and Calcutta.

Marketing system.—The following system is prevalent at Tanda:—The weaver takes his goods for sale to the market every evening, the dealer demands the cloth for a particular price; if the weaver is satisfied, the transaction is finished; otherwise the weaver takes it to other dealers. The dealer is an expert in his line. He at once calculates the number of picks in an inch and the fineness of the yarn used, and knowing the price of yarn calculates the quantity and price of the material used in making the cloth. He adds a certain piece wage and then makes an offer. All this calculation does not take him more than a few seconds.

Suggestions I.—(a) Co-operative credit societies may be started to find cheap money.

(b) Co-operative purchase of machinery like the fly-shuttle looms, warping machine, etc.

(c) Co-operative purchase of raw material and sale of finished goods.

II.—Use of improved appliances and machinery, introduction of improved looms and sleys is urgently required. Sizing and beaming machines can be introduced with advantage. Mylagaon type of loom is finding favour with the weavers, being quite similar to the ordinary loom.

III.—*Warps*—Long length warps should be used. Portable warping frames should be introduced.

IV.—Weaving schools should be run with factories attached to them and worked on commercial lines.

V.—Some system should be devised by which the change in the fashions of the people could be gauged. This can be done by (a) opening institutions in all important centres for gauging these changes, (b) by organizing exhibitions.

VI.—Other needs are collection of specimens of foreign goods for study and imitation, spread of swadeshi spirit, exhibitions of machinery, large and small, and adoption of foreign machinery to Indian needs.

(2) *Durrie weaving.*

Tanda imports bundles of markin and yarn in large numbers. The bundles are tied with pieces of yarn one to two yards in

length. These pieces of yarn are utilised in weaving durries. Such durries are mostly used by the dealers themselves, but are sometimes sold at Rs. 3 a seer. Prayer durries used to be made, but there is no demand for them now. Payment is made by piece work at eight annas a seer.

Three families consisting of seven men are engaged in this industry. The present output is 14 durries (15' × 15') per month. Tanda has a fair chance of developing this industry, as there is no important centre of durrie weaving in Oudh.

(3) Cloth printing.

General.— With the exception of a few itinerant season workers who do not number more than a dozen and are scattered all over the district, the cloth printers are centralised in Tanda. These seasonal printers can be seen busy in Ajodhya a few days before the fairs. They work for the cloth merchants who supply them with cloth, dyes, blocks and other raw materials and get work done on piece wages. Work goes on for about 20 days, day and night. Dhoties and small *gamchas* (towels) of various sizes are thus printed on foreign markin cloth. The printers get two and a half annas for a piece (than) of 20 yards in length and half a yard in width and their daily earnings would not exceed eight annas to ten annas. For a single dhoti the charge is one anna per yard.

The industry is centralised in Tanda, where there are 16 firms having their own factories, seven factories working for the dealers and three dealers having no factories. These give employment to 377 persons. Chintz is mostly printed for export to the hills where it is much liked. *Farda*, *lihafs* and *dogas* are also printed occasionally. Tanda prints do not come up to those of Bulandshahr, Farrukhabad or Lucknow; but cheap prints of fair artistic designs can be seen here and there. There is practically no demand in the province for Tanda prints. Chintz is exported to the hills of Nepal and Darjeeling through Butwal, Kishanganj, Nepalganj and Gorakhpur. Trade with hills is very brisk and 19,216 maunds of cloth was imported in Tanda for printing in the year 1920-21.

Raw material.—The chief raw materials used in the cloth printing are:—(1) cloth, (2) dyes and mordants like (a) naspal, (b) haldi, (c) harra (myrobalan), (d) gum, (e) lime, (f) alum, (g) indigo, (h) alizarine, (i) aniline dies.

The following statement shows the imports, price and use of the various dyes mentioned above:—

Names.	Imports in maunds in 1920-21.	Price per maund.	Places from which imported.	Use.
(a) Naspal (pomegranate rind).	1,778	Rs. 12	Solon and Dharampur mostly, occasionally Hoshiarpur and Amritsar.	Naspal rind contains a certain amount of greenish dye which is extracted by boiling it in water. Its chief ingredient is tannin which acts as a mordant.
(b) Haldi, turmeric (black colour).	2,000	9 which rose to Rs. 13	Brought from Charghat railway station (Bengal) by boats.	Haldi imparts a yellow colour to the cloth, which is changed into red in the presence of an alkali. Various shades of green and orange are also obtained by using it with safflower and indigo.
(c) Harra (myrobalan).	700	3	Mirzapur ..	Acts as a mordant, produces grey and black with iron salts, green with turmeric, dark blue with indigo, brown with catechu and yellow with alum. It is largely used with alum.
(d) Gum	736	23	Mirzapur	Produces a black (syah bhura) colour which changes into shades of grey and brown on application of iron sulphate solution, is used with all solutions for producing thick sticky dyes for clear prints.
(e) Babul	..	15	Alahabad, and	
(f) Dhan	..	15	Jhansi districts.	

Names.	Imports in maunds in 1920-21.	Price per maund in.	Places from which imported.	Use.
(e) Lime	1,000	Rs. s. p. 1 4 0	Katni (Jubbulpur).	(1) Used with soap and gum as a resist paste, (2) with gur and rab to ferment indigo and turn it into white indigo which is the only preparation of indigo easily soluble in water, (3) with other colours to bring out different shades, e.g., baldi to turn the latter into red and catechu to turn it into brown.
(f) Indigo	700 or 500 boxes.	Foreign Rs. 2-3-0 per packet of 1 lb. (112 packets=1 box) Country pucca Rs. 458, katoba Rs. 60.	Bombay. Foreign dye has almost replaced vegetable indigo everywhere.	Used for dyeing blue.
(g) Alizarine.	560=400 casks of 112 lbs. each.	Rs. 120 per cask of 20 per cent.	Cawnpore and Bombay.	It has replaced Al.
(h) Aniline dyes, chiefly scarlet red.	380 mds. 200 boxes of 112 packets of 1 lb. each.	Rs. 218 a packet	Cawnpore and Bombay.	

Cloth.—Cloth used for printing is ordinarily markin and grey shirtings in very rare cases. It is all imported from Cawnpore, Indore and Bombay at rates varying from Re. 1-6-0 to Re. 1-10-0 per lb. 19,226 maunds of such cloth worth Rs. 23,07,120 at an average rate of Re. 1-8-0 per lb. was imported in 1920-21 part of which was carried across the river to Basti. Cloth of local manufacture is seldom used. It is dearer than the mill cloth and is not available in sufficient quantities.

Wages.—Payment is by piece work. First prints are paid at Rs. 6 per 60 yards. After washing, for subsequent prints the payment is Rs. 7 per 60 yards.

A worker earns Rs. 18 to Rs. 24 per month.

Outturn.—Work proceeds for 8 months in the year. It is stopped in the rains—May to August. Total outturn comes to 19,300 maunds of an estimated value of Rs. 15,60,000.

Marketing system.—Some dealers have factories of their own, and a few factories are free to deal with whatever firm they like. A few dealers simply buy in the market and export. Some firms have got their own shops in the hills of Nepal and Bhutan; others have agencies with hill merchants.

Suggestions.—No suggestions are, however, possible, in the present condition of this industry. Tanda holds a monopoly of a particular kind of printing, which, though crude and repellant to people in the plains, is very much appreciated among the poorer people of hilly districts. The hands of Tanda workers and dealers are so full that they will not at present think of introducing any change in the industry. There are, nevertheless, a few suggestions which should be noted:—

- (1) The plank on which cloth is spread should be so fixed that it may not move in the process of printing.
- (2) Felt or blanket should be used on the surface of the plank so that the cloth spread over it may receive clearer prints when pressed over with blocks.
- (3) The drying of cloth on muddy roads and dirty lanes on which all sorts of traffic continues should be avoided.

(B) WOOL.

The district has 47,165 sheep. At the rate of three-fourth seer per sheep per year their yield amounts to 884 maunds of wool. It is all consumed in making rough blankets by Gadaryas who rear the sheep. Sheep are bred more for penning on the field and for meat than for wool. The wool itself is of a very inferior quality. Wool is sold at the rate of eight annas a seer. There is no local demand for it.

9.—Wood Work.

Fyzabad has been famous for its wooden boxes for more than half a century. They are very durable and are made in four sizes suited to serve as (a) *singardans* (ladies' toilet cases), (b) office and tash boxes, (c) *itradans* (scent cases), (d) *qalamdans* (inkstands and pen trays combined).

Singardans are either square or rectangular and serve as ladies' toilet cases and jewellery boxes. Cost Rs. 6 to Rs. 40 each. They are lined with Banat (broad cloth), have many compartments and sometimes hidden compartments called *chor-khanas*. The inside of the lid has a mirror and stationery rack. It is a pet article of high class Indian ladies.

Office boxes are made of shesham wood and are reputed to be very strong. Price: Rs. 3 to Rs. 14 each for ordinary sizes.

Itradans are not commonly made. They cost Rs. 2-8-0 each and are made only to order of some scent dealer or *rais*.

Qalamdans have a wide sale and serve both as inkstands and pen trays. The lids and the boxes are carved out of separate pieces of wood and hinged together. They are thus very strong and do not leak. They cost Re. 1-8-0 to Rs. 2-4-0 each according to their size and the quality of their locks.

Raw materials.—The boxes are all made of shesham imported from Nawabganj which gets it from the neighbouring Tikri forest. A stock sufficient to last for a year is maintained. Foreign locks and hinges are used, so are looking glasses, velvet for lining and brass sheets used in pieces at the corners and for decoration.

Labour.—It is said that about 50 men were engaged in this industry, but the number has declined to 15, and out of these too, only eight have permanent shops. Hired labour is seldom used and is paid at the rate of 12 annas a day per labourer.

A *singardan* takes 10 days to make, a cash box 5, and a *qalamdan* 1½ days.

Outturn.—The average monthly output of these firms is worth Rs. 50 each or Rs. 400 for all. The annual outturn is Rs. 5,000 worth.

Marketing.—The manufacturer owns a shop and sells his goods there.

Suggestions.—

- (1) Wider advertisement by sending articles to exhibitions or opening small show rooms.
- (2) Cheapening the products and increasing their output, by organising supply of material and working on co-operative lines.
- (3) Better seasoning of wood and improving the finish.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

(1) *Oil mill.*—Oilseeds are largely grown in the neighbouring districts which export them to foreign markets from the stations lying in the Fyzabad district. About 50,000 maunds are shown by railway registers at Malipur, Akbarpur and Goshainganj. These could easily be pressed at some central place like Akbarpur. Some enterprising capitalist at this place can take up the idea and start an oil mill on a small scale at present.

(2) *Rice hulling.*—Fyzabad district produces 3,300,000 maunds of rice, a large portion of which is grown in Akbarpur tahsil. If rice hulling could be combined with oil pressing, a powerful factory could be set up at Akbarpur. The process of rice hulling is quite simple and not much machinery is required for carrying on the work as suggested. Akbarpur contains a few capitalists who could take up both the industries together.

(3) *Sawing.*—The district consumes a great deal of building material and timber has to be imported from Bahramghat and Lucknow. There is also the need of timber for cart wheels and ekka manufacture. This could be easily supplied if logs could be brought down from Bahramghat through the Ghagra and sawn at Fyzabad. Fyzabad should then be able to supply timber to Sultanpur and Partabgarh districts in the south and Jaunpur, Azamgarh and Benares in the east. The number of flour mills is unusually large and some of them might change or supplement their activities by taking up this industry as well.

(4) *Spinning mill.*—Mr. Chatterjee in his notes on industries has suggested a spinning mill for the eastern districts, and Fyzabad seems to be eminently fitted for this purpose. The hand weaving centres of Tanda and Mau in the east and the weaving districts of Sultanpur, Partabgarh and Bara Banki all round hold out a great promise for its success. The

non-availability of raw material will be balanced by the advantages of cheap labour, nearness to coal districts of Bengal and continuous demand for yarn in all the neighbouring districts. There is particularly the need of a spinning mill which will cater only for the demand of hand-loom weavers and supply them the best possible yarn.

(5) *Leather tanning*—Also requires a tannery in the district. Fyzabad, with its neighbouring districts, export a large number of hides and skins. The local manufacturers also use them to a certain extent for country shoes and for the soles of other shoes. The local ways of tanning by Chamars are very crude. The availability of raw materials, labour and tanning materials in Fyzabad district should induce some capitalist to take up the work in hand. Indeed 29,000 hides and 33,000 skins in this district alone are quite sufficient to keep the tannery going.

CHAPTER IV.

STATISTICS.

1.—Lime manufacture.

Raw material.—

Quantity—540,400 c. ft.

Price—Rupees 4 to Rs. 12 per 100 c. ft.

Place of origin.—Local.

Manufactures.—

Capital—Rupees 23,000.

Labour—75 persons.

Outturn—108,000 c. ft.

Mechanical appliances—Grinding mill and oil-engines

2.—Brick manufacture.

Raw material.—Clay.

Quantity—Available everywhere.

Price—Royalty Rs. 250 to Rs. 300 a bigha.

Place of origin—Local.

Manufactures.—

Capital—Rupees 75,000.

Labour—400 persons.

Outturn—7,500,000 bricks.

3.—Bell metal industry.

Raw material.—

Quantity—4,800 maunds annually.

Price—Rupee 1 to Re. 1-2-0 per seer (old utensils).

Place of origin—Local.

Manufactures.—

Labour—200 men.

Wages—Twelve annas to Re. 1 a seer.

Outturn—3,600 maunds annually.

4.—Steel trunk manufacture.

Raw material.—Galvanized iron sheets.

Imports.

Quantity—Not known.

Price—Rupees 25 per maund.

Place of origin—Cawnpore.

Manufactures.—

Labour—20 persons.

Wages—No hired labour.

Outturn—1,000 trunks a year.

5.—Wheat milling.

Raw material.—

Quantity—87,000 maunds.

Price—Rupees 5,65,000.

Place of origin—Nawabganj (Gonda) and local.

Manufactures.—

Capital—Rupees 26,000.

Labour—90 persons.

Outturn—85,369 maunds.

Mechanical appliances—Mill and oil-engines.

6.—Hand-loom weaving.

Raw material.—Yarn.

Import, 1920-21.

Quantity—19,000 maunds.

Price—Rupees 2,00,000.

Place of origin—Cawnpore; Indore, Ahmedabad.

Manufactures.—

Labour—16,000 men, women and children.

Wages—One anna to 1 anna 6 pies per yard.

Outturn—19,345 maunds.

7.—Durrie weaving.

Raw materials.—Yarn pieces.

Import.

Quantity—Very uncertain.

Price—Rupees 3 a seer.

Place of origin—Local.

Manufactures.—

Labour—7 men.

Wages—Eight annas a seer.

Outturn—14 durries (15' × 15') per month.

8. — Cloth printing

Raw material.—

Import, 1920-21.

Articles.	Quantity. Mds.	Price. Rs.	Place of origin.
1. Cloth	... 19,228	23,07,120	Cawnpore, Indore and Bombay.
2. Pomegranate rind	1,778	21,336	Hoshiarpur, Amritsar
3. Turmeric	... 2,000	18,000	Charghat, Rajshahi, Bengal.
4. Myrobalans	... 700	2,100	Mirzapur tarai.
5. Gum	... 736	14,720	Allahabad, Jhansi and Mirzapur district.
6. Lime	... 1,000	1,250	Katni (Jubbulpur).
7. Alum	... 300	6,000	Calcutta and Cawnpore.
8. Indigo	700	1,22,500	Bombay.
9. Alizerins	.. 560	48,000	Cawnpore and Bombay.
10. Aniline dyes	... 280	6,000	Ditto.

Manufactures.—

Capital—Rupees 15,60,000, annual turnover.

Labour—377.

Outturn—About 20,000 maunds.

9. — Wood work

Manufactures.—

Labour—15 men.

Wages—Twelve annas a day.

Outturn—One *singardan*, 2 cash boxes, and 6 *qalamdars*.

10. The following is a statement showing approximately the fixed capital invested by the proprietors of the flour mills in the machinery—(See industry no. 3):—

						Rs.
Sital Prasad	...	Engine 24 H. P.	Total capital			6,000
Muhammad Ismail		" 24 "	" "	" "	" "	5,000
Jai Gopal	...	" 18 "	" "	" "	" "	3,500
Wazir	...	" 18 "	" "	" "	" "	3,500
Aulad Ali	...	" 12 "	" "	" "	" "	2,500
Kirpa Shankar	...	" 12 "	" "	" "	" "	2,500
Ala Rakhu	...	" 12 "	" "	" "	" "	2,500
Sankata Prasad	...	" 12 "	" "	" "	" "	3,500

All of these mills are running only a few hours daily and supply the civil demand, the military getting their flour from Lucknow.

CHAPTER V.

DIRECTORY.

1.—List of banks.

- (1) The Allahabad Bank, Ltd.
- (2) The Oudh Commercial Bank.
- (3) The Ajothya Bank.
- (4) The District Co-operative Bank.
- (5) The Fyzabad Bank (in liquidation).
- (6) The Kashmiri Bank (in liquidation).

2.—List of lime factories.

- (1) Factory of Mr. Muhammad Ismail.
- (2) Factory of Pandit Sheo Narain.
- (3) Factory of Babu Ram Lal.

3.—List of cloth printing factories.

- (1) Shafi Muhammad, Chhajjapur, Tanda.
- (2) Ewas Muhammad, Chhajjapur, Tanda.
- (3) Hajjiyar Muhammad, Chhajjapur, Tanda.
- (4) Bhullan Ram and Balak Ram, Hayatganj, Tanda.
- (5) Saadat Khan, Hayatganj, Tanda.
- (6) Nisaran, Hayatganj, Tanda.
- (7) Sheo Narain Lal, Hayatganj, Tanda.
- (8) Jiwanram Gulraj, Hayatganj, Tanda.
- (9) Girdharilal and Bhawani Parshad, Hayatganj, Tanda.
- (10) Bale Barai, Purwa, Tanda.
- (11) Gaya Kalwar, Purwa, Tanda.
- (12) Dwarka Singh, Purwa, Tanda.
- (13) Rama Nand, Purwa, Tanda.
- (14) Abdul Rahman.
- (15) Sita Ram Singh.
- (16) Shukrulla Ramzan.
- (17) Ramdass.

- (18) Ganga Ram Jia Lal.
- (19) Shah Muhammad.
- (20) Badal Khan.
- (21) Gulab Khan.
- (22) Man Khan.
- (23) Mirza Wajid.
- (24) Sakhawat Khan.
- (25) Riayat Khan.
- (26) Bhairon Kuer.

4. - List of flour mills.

- (1) Factory of Lala Sital Prasad.
- (2) Factory of Mr. Muhammad Ismail
- (3) Factory of Babu Jai Gopal.
- (4) Factory of Wazir.
- (5) Factory of Aulad Ali.
- (6) Factory of Babu Kirpa Shanker.
- (7) Factory of Ala Rukh.
- (8) Factory of Babu Sankata Prasad.

5 - List of wood cash box manufacturers.

- (1) Bipat, Chowk Bazar, Fyzabad.
- (2) Mannu, Chowk Bazar, Fyzabad.
- (3) Hanuman, Chowk Bazar, Fyzabad.
- (4) Ajo lhia, Chowk Bazar, Fyzabad.
- (5) Asre, Chowk Bazar, Fyzabad.
- (6) Paltan, Chowk Bazar, Fyzabad.
- (7) Hazari, Chowk Bazar, Fyzabad.
- (8) Bisheshawar Prasad, Chowk Bazar, Fyzabad

CHAPTER VI.

MISCELLANEOUS.

Note on dyeing and printing trades in Tanda by H. B. SHROFF, Esq., B.Sc., etc., Principal, Government School of Dyeing and Printing, Cawnpore.

Dyeing in Tanda is not a very important trade. Whatever work is carried on is not sufficient, by any means, to satisfy the required needs, and this is partly due to the want of knowledge of dyeing the proper colours and to difficulties in getting the necessary colours and chemicals in small lots as they require. Introduction of the following colours is required:—

- (1) Sulphur colours, all shades.
- (2) Mineral colours like chrome yellow, orange, green, khaki.
- (3) Cutch brown.
- (4) Aniline black.
- (5) Turkey red, etc.

It is very difficult for the dyers to import from the bazar colours in small quantities. The most of the sulphur colours are not sold in the bazar at all. Alizarine is only sold in 1 cwt. packing. Arrangements should be made to keep these colours in stock in the Government School of Dyeing and Printing, Cawnpore, and distributed from there to the dyers through the Peripatetic Dyeing School and through the various weaving schools. The experiment is likely to bristle with difficulties, but an attempt, if made, will be in right line unless private or co-operative effort is made. In many places besides Tanda there is room for initiation of this attempt as there is no scope for private enterprise due to smallness of requirements. But at the same time if no attempt is made the introduction of many important and useful classes of colours becomes unsuccessful in spite of the efforts of the Peripatetic Dyeing School.

Printing is a more important trade in Tanda. Nearly 375 printers are employed, whereas there are only about 40 dyers.

The Karkhanedars employ printers who are both Hindus and Muhammadans. The total capital invested in printing is nearly 3-4 lakhs but the annual outturn is worth Rs. 15,60,000.

All the printed cloth is exported to Nepal. The work is crude; there is hardly any trace of art, and it cannot but be characterised as unpleasant. But it has a market only in Nepal and said to be suitable for it.

The colours employed are iron tannate for blacks, alizarine red, and then some of the vegetable colours such as *anar* (pomegranate rind), indigo, turmeric, etc. The cloth is tanned in a decoction of myrobalan and printed over with *kasis* (ferrous sulphate) or *kasoda* (ferrous acetate) for black and alum with *geru* for righting purposes for red. After printing the goods are dried and hung up and then sent to river for washing. Then it is dyed up with alizarine, and wherever there is aluminium, a red will be produced. After this dyeing the pieces are sent for washing. They then produce yellow, brownish yellow or green grounds on the printed cloth by applying with pads of yarn or cloth thickened decoctions of turmeric, *anar* or indigo and turmeric mixed, respectively. The pieces are sold unwashed.

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Gārhwāl District

By

H. N. SAPRU, B.A.



ALLAHABAD:

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1 G. D.

CONTENTS.

	<i>Page.</i>
CHAPTER I.—Introduction.—	
1. General features	1
2. Rivers	<i>ib.</i>
3. Lakes	<i>ib.</i>
4. Hot springs	2
5. Fairs	<i>ib.</i>
6. Ferries	3
7. Roads	4
8. Railways	5
9. Population	<i>ib.</i>
10. The Tibetan trade	<i>ib.</i>
11. Exports and imports	7
12. Prices	10
13. Difficulties	11
14. Weights and measures	12
15. Internal and Bhabar trade	<i>ib.</i>
16. Mineral resources.—	
(1) Gold	13
(2) Copper	<i>ib.</i>
(3) Iron mines	16
(4) Lead and Graphite	17
(5) Sulphur	<i>ib.</i>
(6) Gypsum and soap stone	18
(7) Asbestos and Silajit	<i>ib.</i>
17. Forest resources.—	
(i) North Garhwal	19
(ii) South Garhwal	21
18. Industrial education	23
19. Water power	<i>ib.</i>
20. Cattle Census (1912)	25
CHAPTER II.—Description of, and suggestions for the improvement of, various industries of the district.—	
1. Building materials	26
2. Food grains.—	
(a) Grain Grinding	<i>ib.</i>

	<i>Page.</i>
(b) Other edibles—	
(i) Ghee	27
(ii) Tea	<i>ib.</i>
3. Hardware.—	
(i) Copper utensils	28
(ii) Khukri and daggers	29
4. Leather.—	
(i) Tanning	30
(ii) Shoe-making	31
(iii) Buckets	<i>ib.</i>
5. Miscellaneous.—	
(i) Gold refining	<i>ib.</i>
(ii) Beefarming	33
(iii) Fisheries	34
(iv) Jail industries	<i>ib.</i>
6. Stone carving	35
7. Textile.—	
(i) Wool manufacture	<i>ib.</i>
(ii) Other fibres (Kapas and cotton)	37
CHAPTER III.—Industrial possibilities.—	
1. Easy communication	39
2. Rishikesh-Karnprayag Light Railway	40
3. Aerial ropeways	41
4. Water power	42
5. Woollen industry	<i>ib.</i>
6. Weaving school	<i>ib.</i>
7. Hemp weaving	<i>ib.</i>
8. Stone carving	43
9. Match making	<i>ib.</i>
10. Medicinal herbs	44
11. Mining industry	<i>ib.</i>
12. Agricultural industries	<i>ib.</i>
13. Ghee and honey	45
14. Sheep-breeding	<i>ib.</i>
15. Charcoal as a wonderful fertilizer	46
16. Slates and pencils	<i>ib.</i>
17. Essential oil	<i>ib.</i>
CHAPTER IV.—Statistics.—	
1. Building materials	47
2. Wheat and other grains grinding	<i>ib.</i>

CONTENTS.

ii

	<i>Page.</i>
3. Other edibles (Ghee)	48
4. Hardware	<i>ib.</i>
5. Leather	49
6. Tea	<i>ib.</i>
7. Gold refining	50
8. Woollen industry	<i>ib.</i>
9. Other fibres (hemp, kipasi and cotton) ...	51
CHAPTER V.—Directory.—	
1. Cloth merchants	52
2. Cloth and utensil dealers	<i>ib.</i>
3. Forest contractors	53
4. Charcoal contractors	<i>ib.</i>
5. Tobacco merchants	54
6. Hide and skin merchants	<i>ib.</i>
7. Grass contractors	<i>ib.</i>
8. Khukri and sharp instruments manufacturers	<i>ib.</i>
9. Tea and fruit gardens	<i>ib.</i>
10. Silajit contractors	<i>ib.</i>
11. General merchants	<i>ib.</i>
CHAPTER VI.—Miscellaneous.—	
<i>Tehri State</i>	55
BIBLIOGRAPHY	57

CHAPTER I.

INTRODUCTION.

1. General features.

(a) *Boundaries*—

East—Almora district.

West—Tehri State.

North—Tibet.

South—Bijnor and Naini Tal districts.

(b) *General description*.—British Garhwal, as distinguished from the native state of Tehri Garhwal, is one of the three districts of Kumaun division, and it lies almost entirely within the Himalayan system. The country consists of a succession of steep mountain ridges, divided from each other by deep glens. There is no level land, excepting the holm of Srinagar, the pasture of Panai on the banks of Alakhnanda and the sub-montane tract. The glens are narrow and precipitous, though they occasionally open out as at the Lobha plateau. On the north the snowy range separates it from Tibet.

2. Rivers.

(1) Ganges, with its tributaries Alakhnanda (the confluence of Vishnuganga and Dhauliganga), Nandakini, Pindar, Mandakini and Nayar.

(2) Ramganga, with its tributary Mandal.

(3) Khoh (between Dwarikhal and Dogadda).

3. Lakes.

(1) Satopant.

(2) Lokpal-ka-kund.

(3) Deotal.

(4) Diuri Tal (above Ukhimath).

(5) Gohna or Durmi lake.

(6) Beni Tal.

(7) Sukha Tal.

(8) Tarag Tal.

The former three are in the snowy range and are quite extensive, though not easily accessible; the last three are unimportant because they are mere stagnant ponds in depressions on the ridges receiving annual rainfall. The fifth is the

largest, not only in this district but in the whole of Kumaun division.

In spite of the continuous downpour of water into the valley, it still measures two miles long and half a mile wide with an area of 400 acres—more than three times the size of Naini Tal.

4. Hot springs.

At Gouri Kund on the road to Kedarnath.

At Badrinath Tapt Kund.

At Tapoban (four).

Bhauri near Amola village (pargana Ganga Salan).

At Kulsani, left bank of Pindar.

On river Palain in patti Badalpur.

5. Fairs.

Pargana Chamkot.

Patti.	Locality.	Name of fair.	Date.
Gujru ...	Salt Mahadeo	Kakrani ...	Magh Nagla Sankrant (middle of January).
Iriakot ...	Jhalkaran ...	Do. ...	Ditto.
Gujru ...	Salt Mahadeo	Bikhwati...	Bikhwat Sankrant (middle of April).
Jaintolsyun	Igasar ...	Do. ...	Ditto.

Pargana Dewalgarh.

Gujru ...	Salt Mahadeo	Bikhwati ...	Ditto.
Chauthan..	Binsar ...	Baikunth Chaturdashi.	Kartik (November).
Kandarsyun	Paithani ...	Shivrarti ...	Phagun (February).

Pargana Barasyun.

Dhajjuli ...	Kot Kandai...	Shivratri...	Phagun (February).
Katholsyun	Srinagar Kamaleshwar.	Baikunth Chaturdashi.	Kartik (November).
Idwalsyun...	Bilwa Kedar ..	Bikhwati...	Baisakh (April).
Rawatsyun	Kanda ...	Bhayaduj ...	Kartik (October or November).
Kapholsyun	Jwalpa ...	Ashtbali ..	Jeth (May).
Maniyarsyun	Sangara ...	Do. ...	Do.

Pargana West Chamroli.

Patti.	Locality.	Name of fair.	Date.
Bichla Nagpur.	Nagnath ...	Janmasthan	Bhadon (August).
Talla Nagpur.	Rudrprayag...	Makar Sankrant.	Magh (January).
Malla Nagpur.	Gopeshwar ...	Shivratri.	Phagun (February).
Malla Painkhanda.	Joshi Nath ...	Departure of Rawal Badrinath.	Baisakh (May).
Talla Painkhanda.	Pandu Keshwar.	Ditto ...	Ditto.
Talli Dasoli	Nandprayag...	Makar Sankrant.	Magh (January).

6. Ferries.

Ferry.	Description of ferries.	Name of patti.
Dhari ...	Jhula ...	Chalansyun.
Kothar ...	Boat ...	Katalsyun.
Ranihat ...	Do. ...	Ditto.
Kandi (Baklerghat) ...	Jhula ...	Banelsyun.
Uttrasu ...	Do. ...	Bangarsyun.
Rampur Talla ...	Do. ...	Rawatsyun.
Tini ...	Do. ...	Dhanpur.
Kyunjgarh ...	Do. ...	Talla Kaliphat.
Bedubargar ...	Do. ...	Ditto.
Agastmuni ...	Do. ...	Ditto.
Chandrapuri ...	Do. ...	Ditto.
Kakraghat ...	Do. ...	Malla Kaliphat.
Tilbara ...	Do. ...	Talla Nagpur.
Uttiasu Rudraprayag ...	Do. ...	Ditto.
Rampur ...	Do. ...	Ditto.
Kathagi ...	Do. ...	Dasgula.
Bagmunda ...	Do. ...	Talla Dasoli.
Kald (Khunain) ...	Do. ...	Ditto.
Langasu ...	Do. ...	Ditto.
Banala Dasoli ...	Chinka ...	Ditto.
Nauli ...	Jhula ...	Bichla Chandpur.
Nalgaon ...	Do. ...	Shirgur Karakot.
Tatasu ...	Do. ...	Talla Chandpur.

Ferry.	Description of ferries.	Name of patti.
Dhunargaon (Phulasi) ...	Boat ...	Talla Dhangu.
Dhangugarh ...	Jhula ...	Ditto.

7. Roads.

I. Provincial.

A. First class, metalled, bridged and drained throughout.

	Length in miles.
Kotwar-Dogadda ...	10
Lansdowne-Dogadda ...	15

A. Second class, unmetalled, bridged and drained.

Hardwar-Badrinath ...	164
Rudrprayag-Kedarnath ...	53
Chamoli-Gupt Kasbi ...	27
Dogadda-Srinagar ...	47
Karnprayag-Khairna ...	28

B. Second class, unmetalled, partially bridged and drained.

Lansdowne-Najibabad (Fatehpur to Kauria)	2
------------------------------------------	---

II. Local Roads.

A. Second class, unmetalled, bridged and drained.

Naudprayag-Gwaldam ...	39
Pouri-Samai ...	48

B. Second class, unmetalled, partially bridged and drained.

Joshimath-Niti ...	41
Adwani-Byansghat ...	9
Ayardhar-Lansdowne ...	5
Banjagar-Lohba ...	21
Baij Rao-Bungidhar ...	16
Byansghat-Dangal ...	15
Chaukighat-Dangal ...	39
Budasini-Dwarikhal ...	26
Bungidhar-Lohba ...	13
Chatwapipal-Ukhimath ...	29
Chatwapipal-Mandakhal ...	35
Chamoli-Pokhri ...	13
Chandapur-Ukhlal ...	56
Srinagar-Musagali ...	12
Dewalikhal-Kuiroli ...	6

	Length in miles.
Dipakhal-Mandeb ...	15
Dobri-Kirsal ...	5
Ukhlaith-Domaila ...	29
Fatehpur-Ukhlet ...	13
Pauri-Deoprayag ...	15
Raipur-Dhontyal ...	10
Gwaldam-Ramni ...	38
Tapoban ghat ...	34
Joshimath Niti ...	41
Saraunkhal-Joripani ...	9
Kainyur-Marchula ...	40
Manda Khal-Mason ...	7
Seria-Mandal ...	22
Pouri-Saraikhet ...	45
Jhorali-Simli ...	23

8. Railways.

Stations.

Kotdwar-Najibabad line (15 miles). Kotdwar, Saneh road,
Najibabad.

9. Population.

485,186 (males 232,863; females 252,323).

10. The Tibetan trade.

The trade with Tibet is monopolised by the Bhotias of the Mana and Niti Valleys. But as compared to their neighbours of Almora district they are in much smaller number and form a depressed community. A few johari Bhotias also live in the Niti Valley together with the Khampas, who are Tibetans. The Bhotias live chiefly by trade across the border and with the submontane markets. They carry their merchandise on sheep and goats, though sometimes on asses or yaks, over the Mana and Niti passes, where the snow does not melt until May or June. The season lasts till November, and within this time an energetic Bhotia will make three or even four journeys. There are some restrictions on behalf of the Tibetan Government to prevent the import of diseases from this side to their own territory. Several taxes are also levied

by the Tibetan officials on the traders. Niti village is about 30 miles by road from the frontier, and the mart of Dapa, to which they chiefly resort, is the same distance from the watershed towards Tibet. From Dapa they may obtain special licences to trade in Hoti, Dam, Chogila, Shib-Chilam and Garrok. The Mana Bhotias go chiefly to Chaprang and Thooling Math marts. The taxes levied on the Bhotias are as follows :—

- (1) An initial fee for entrance.
- (2) Final fee when the business is done.
- (3) Lha thal or due for crossing a ridge at Hoti.
- (4) An impost at Dapa market.
- (5) Poo—a further impost.
- (6) Lhamik—licence to trade in other marts.
- (7) Gothai—door tax for houses occupied in Tibet.
- (8) Poll tax at Hoti, Joharis.
- (9) Thap thal (hearth tax), Joharis.
- (10) Sing thal (land tax) from Mana people.

Although the Bhotias have a monopoly of Tibetan trade, the villagers of the northern parts trade as well, though only between the Bhotia passes and their own neighbourhood. From July to November these passes are thronged with these people and their own or borrowed flock of sheep and goats. Salt is received in exchange of grain and distributed throughout the Upper Garhwal.

In October the Bhotias return finally from Tibet and as the winter advances proceed southwards with their Tibetan merchandise. In November their homes are covered with snow and hence they establish camps for their women and children and dépôts for their stock-in-trade at suitable places along the road through the upper midland parganas. From these camps they make two or three journeys to the plains and sell for cash or exchange for grain at advantageous rates all their goods at Kotdwar or Ramnagar. On their way, they also make excursions into the villages on either side of the route and sell salt and wool to villagers for their requirements. On the return journeys the Bhotias often carry up grain or salt from the submontane markets for up-country Banias. Their flock exist by grazing only and consequently their marches from day to day do not exceed 6 or 7 miles.

11. Exports and imports.

The chief exports to Tibet are food grains (such as barley, wheat, rice, dal, phaper, Jhangora, mandua), onions, potatoes, and cloth of all kinds, gur, tobacco, sugar, spices, dried fruits and silver; and the imports are salt, borax, ponies, jibus, goats and sheep, dogs, wool and woollen goods of all kinds, rugs, Chinese shoes, ornamented Tibetan saddles, tea, butter, gold, yak's tails and horns. Salt and borax are exchanged as a rule for food grains, while for other articles the Bhotias receive cash or piece-goods. Nand Prayag is an export market.

Traffic registration.—Posts are maintained at Jangla and at Bampa for the registration of trade between Tibet and British Garhwal. The following figures will give an idea of the existing trade between the two territories :—

Exports.

8

Articles.	Post Jangla.		Difference.	Post Bampā.		Difference.
	1921-22.	1922-23.		1921-22.	1922-23.	
	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
Piece-goods, European	...	4	+4	79	71	-8
Piece-goods, Indian ...	6	...	-6	49	34	-15
Earthenware, Porcelain	...	...	...	...	Rs. 320	Rs. +320
Grain and pulse	...	...	...	1,740	Mds. 1,505	Mts +235
Wheat ...	88	88	-2	113	131	+18
Other spring crops ...	213	1,620	+1,407	1,911	4,144	+2,233
Rice, husked	864	632	-232	1,226	1,355	+129
Do., unhusked	...	...	...	107	100	-7
Other rain crops	...	140	+140	314	407	+198
Tobacco	2	2	...	43	23	-20
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Silver ...	1,900	4,800	+2,900	25,140	25,285	+145

INDUSTRIAL SURVEY.

Imports.

Articles.	Post Jangla.		Difference.	Post Bampa.		Difference.
	1921-22.	1922-23		1921-22.	1922-23.	
	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
Borax ...	...	...	...	2,874	3,141	+267
Salt ...	776	2,175	+1,399	10,889	11,426	+537
Wool, raw ...	192	524	+332	2,427	2,699	+272
Do., manufactured...	6	6	...	74	56	-16
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Yak's tails ...	18	93	+75	1,665	1,087	-578
	No	No.	No.	No.	No.	No.
Horses, ponies and mules ...	2	4	+2	50	34	-16
Cattle ...	...	...	...	70	25	-45
Sheep and goats ...	905	2,549	+1644	13,138	12,445	-693
Other kinds ...	...	17	+17	40	37	-3

GARHWAL DISTRICT.

12. Prices.

Imports.

Articles.	Borax.	Ghee.	Salt.	Wool.	Hide.	Skins.	Horses and ponies, Tibetan.	Mules.	Sheep and goats.
Rate per maund	Rs. 6	Rs. 50	Rs. 6	Rs. 50	Rs. 20-45	Rs. 30-40	Rs. 100-600 each.	Rs. 200-500 each.	Rs. 2-10 each

Exports.

Articles.	Tobacco.	Wheat.	Rice, husked.	Rice, un-husked.	Other spring crops.		Other rain crops.		Brass and copper.	Iron.	Bhotia, horses and ponies.	Mules.
					Barley.	Na.	Jhangora.	Phaphar.				
Rate per maund	Rs. 30	Rs. 20	Rs. 20	Rs. 10	Rs. 5	Rs. 6	Rs. 18	Rs. 5	Rs. 120	Rs. 80	Rs. 100-600 each.	Rs. 200-500 each.

Besides the trade with British Garhwal, some trade is also carried on between Tibet and Tehri State which is not included in the above statement. The trade marts for Tehri people are at Pooling and Chaprang. A new mart for all the Garhwal people is also found at Thakur which lies on the banks of Mansarowar where wool is to be had in plenty. The trade on the western side of Tibet is not so prosperous and there are many difficulties which hamper its further development.

13. Difficulties.

1. The roads are in a most deplorable condition, not only in the district itself but further north as well.

2. Jongon, Lamas and Taklakot people corner a great deal of Taklakot trade and then barter with Nepalese with considerable profit. The Nepalese who come to Tibet are not allowed to trade with anybody, except with the former. But the Nepalese try to enforce their rights by bayonets and swords.

3. Accustomed to the principle of "might is right", the Tibetan officials think that the rights of armless people of Garhwal are feeble, weak and mere scraps of paper. Hence the Bhotias suffer a great deal.

4. Takla people do not allow the Garhwal Bhotias to proceed further north to Thakur mart with the selfish motive of getting the middleman's profit with a vengeance.

5. Then there are exchange difficulties. Currency notes cannot be exchanged, silver becomes scarce and the barter depends upon the amount of grain. Traders with much grain get much wool, borax and salt; others who have not got sufficient quantity of it remain at a disadvantage. The capital is very dear.

6. The officials get the tax at the prevailing low value of Tanka, remit to Tibetan Government by the standard value and keep the balance to themselves.

7. They very often arbitrarily fix low prices of all Bhotia goods. They also promise to buy goods by instalments and later on refuse to buy anything and ask the traders to sell at still lower rates.

8. Free trade is hampered by unauthorised taxes. There is an urgent need of settling these points with the Tibetan

Government and strong measures should be taken to safeguard the Indian trade.

14. Weights and measures.

The standard measure of capacity in Garhwal is the *nali* or *patha*. A *nali* of wheat weighs exactly two seers: one of rice about $1\frac{3}{4}$ seers; twenty *muthis* (handfuls) or four *manas* are equal to one *nali*: 16 *nalis* make a *don* or *pirai*, and 20 *dons* make a *khar*. In the Bhabar the heavy seer of 90 tolas is used, while up-country the 84 tola seer is current.

The standard of square measure is also *nali*; a *nali* of land is the amount that can be sown by one *nali* of wheat. *Nali* is standardised at 240 sq. yards. Twenty *nalis* make a *bisi* or an acre.

15. Internal and Bhabar trade.

Besides the Bhotias' traffickings in salt and wool imported from Tibet, trade between the villages is carried on to get special products such as sesamum from Barahsyun, chillies from villages, ghee from the north and honey from bee-keepers in exchange for food grains. Surplus rice, wheat and ghee are sold to the shop-keepers along the pilgrim way. Ghee is at first collected in Pipalkoti, whence it goes to Badrinath. Bees are kept in most villages over 5,000 feet and honey finds a ready sale. A small local business is also done in blankets and hemp.

Garhwal is dependent for the supply of its chief commodities, namely, cloth, sugar, salt and iron (in the south) on outside markets. Northerners employ the agency of Bhotias, while the people of Dasoli and Nagpur use their own flocks of sheep and goats. The majority employ labourers called *Dhakri log* of the hills and Banjaras with their ponies and mules who come from Nagina or Najibabad in the Bijnor district. The merchandise obtained in the Bhabar marts is usually paid for in cash. Villages of the south which can command sufficient pasturage usually bring down their surplus stock of ghee to sell here, while the pattis of Malla Salan and the western ones of Talla Salan usually have, after the necessary purchases have been made from the sale of chillies, ginger and turmeric, a surplus sufficient to pay the Government revenue. Dogadda is a flourishing market, while Kotdwar is still rising.

16. Mineral resources.

Like its sister districts, Garhwal also has several copper and iron mines. Several surveys were made and experiments carried out in the 19th century, but no tangible results seem to have come to light. The experiments made on behalf of the Government are said to have failed partly owing to poorness and scarcity of ores at places where they were made and partly to the extravagance and incompetency of the staff employed. There were also difficulties about fuel, labour and transportation. But in spite of these difficulties contractors got the mines worked as late as 1919 when the Government stopped its working. Lack of scientific mining also contributed to its decline. In 1865 there were 24 iron, 9 copper and 2 lead mines worked in Garhwal and 33 iron, 35 copper and 3 lead mines had been abandoned. In 1918 and 1919 there were 18 iron mines and one copper mine worked by native methods. A general survey of different mineral resources of the district is as follows:—

(1) Gold.

Although no mine has been discovered as yet, there are indications of its existence in Garhwal. The sands of Alakhnanda, Pindar and Sona rivers furnish a small amount of gold dust. The Ganges also is auriferous as far as Lachman-Jhula and Ramganga for a short distance below its junction with the Sona. Washing out gold is nowhere a profitable occupation, although undoubtedly a greater return might be had from this source by the use of mercury as is done in Australia for separating gold from sand. Mercury is recovered afterwards by a simple process of distillation. One Captain Herbert is said to have found long ago gold in a matrix of granite near Alakhnanda.

Principal gold mines of Tibet are dealt with in the Almora Survey Report.

(2) Copper.

The mines of British Garhwal are more extensive and have always borne a higher reputation than those of Kumaun. The principal mines are situated at Dhanpur and Dhojri in pargana Dewalgarh.

(i) *The Dhanpur mine* is situated on the north side of a high and precipitous range in compact dolomite. The ores are principally copper pyrites and grey or vitreous copper ores with the red oxide and green carbonate in smaller quantities, the latter being scarce. The ores are found in a bed about 50—60 feet wide which nearly run north and south, and underlies east about one foot in the fathom. It is divided by a bed of pot stone or indurated talc, which runs through the copper formation longitudinally, conforming to the strata and having a frith or flukan on the western side. The seams of ore are sometimes one foot in thickness, but seldom more than one inch. The veins are very close together, and being softer than the matrix the ore used to be first removed and then the miners burned the rock with wood and threw water on it to facilitate removal. The red dolomite is of such a consistence as to seldom require props for its support, thus enabling the miners to dispense with wooden framework and to work all the year round, while the situation of the mine on the top of a hill admits of adits for drainage.

(ii) *Dhobri mine* is situated on the south side of the Dhanpur range in very nearly the same kind of rock as the Dhanpur mine. At the surface they are very small, containing oxide of iron and green stains of copper and occasionally copper pyrites. There are several rich old mines west of the valley. Dhobri. The ores of those mines are principally copper pyrites worth 25 per cent. of copper. There is water for machinery about a mile and a half below the mine and wood for all purposes near that place. There is another mine on this range at Maulgiri, said to be in the same rock as the Dhobri mine. There are other mines of both copper and iron in Dhanpur, but they are for the most part of little value. There is a copper mine in patti Lobha at Agar Sira in the face of a precipice on the right bank of the Ramganga river.

(iii) *Pokhri mines*.—That known as the Chaumathiya is situated in talc which rests on dolomitic limestone. The lode after crossing the ridge east of the mine enters a very compact basin in which is situated the Duined mine. This has not been worked much, owing to the softness of the talc and the abundance of water, but it is said to have good lode in one part of it. The lode then crosses the hill near Deothan—a small

village above the mine—and is found near Gugli and Keswara, where some ores had been extracted, but never proved very profitable in working.

(iv) *Raja's mine*.—The Raja's mine is situated about 450 yards north of the Chaumathiya mine in common dolomite which rests on talcose schist. There were also three places where copper was found—the Gaja Chauk, Kuvera Chauk and Bhartwal-kud, all of which have now fallen in. They yielded 25 per cent. of copper. Experiments were made in the 19th century by one Mr. Wilkin, but they are said to have failed.

In addition to these there are several others in the vicinity of Pokhri which are as follows :—

(v) *Nota mine*.—The Nota mine is situated about two and a half miles north-west of Pokhri mine in talc which rests on dolomite limestone. The lode is a bed of yellow or buff coloured talc, about 4 feet wide, dipping north-west at 50° ; it rests immediately on the dolomite limestone and has a sulphuric efflorescence on the surface. This mine is said to have been rich; it is situated on the western side of an extensive basin or valley, on the eastern side of which ores have been turned up by the plough, but no mine has been worked. This is an extensive field for mining as the lode may be productive throughout the basin or valley. There is wood and water for all purposes near this mine.

(vi) *Thala mine* is situated about a mile north-west of the Nota mine, probably on the same lode, in an extensive plain or comparatively level surface. There being no good facility for adits, the water prevented its being worked to any considerable depth. Ores are copper pyrites disseminated in a lode of 2 feet wide, one-fifth of which are metalliferous. There is plenty of wood for all purposes in the neighbourhood of this mine.

(vii) *Danda mine* is situated on the hill, about 500 yards above Thala mine, in chlorite slate and talc, which on the north-western side comes in contact with common dolomite. It was worked to a considerable extent. The ores are of good quality and are found in three or four different beds or holes which dip into the hill at an angle of 30° . The chlorite slate in which the beds of talc and ores are found is so hard as to stand without timber; it also contains finely disseminated copper in small quantity. The lodes run into a fine fall or basin

westward, in which they are thought to be found productive. There is abundance of wood near this mine, but no water for machinery is nearer than the Thala mine.

(viii) *Talapungla mine* is situated about a mile north-east of the Danda mine in talc, which rests on dolomitic limestone. The bed is extensive, but the ores are scarce; however this might improve at a distance from the surface. Ores have been found in a precipice east of this mine, near the village of Bangtal; but at present the outcrop is covered with rubbish; it is in the talcose formation and has good facilities for working.

(ix) *Kharna mine* is situated in the ravine below Bangtal, near its junction with the Nagal river in talc. It was not worked because of the immensity of water. The lode is at the bottom of the mine for 2 fathoms in length and is one foot wide, of solid copper pyrites. The surface contains a small quantity of copper pyrites. There is plenty of wood in the neighbourhood of this mine and water for machinery, but there is no facility for adits.

(3) *Iron mines.*

The iron mines in patti Painkhanda exhibit specimens of granular iron pyrites imbedded in veins of quartz which occur in a dark-greyish talcose schists. Apparently they are not rich in ore. In patti Silichandpur the Rajbunga mine gives a rich haematite which is slightly attracted by the needle. The Khush mine in the same patti gives a micaceous ore, scaling off easily and showing minute crystals resembling garnets on the edges of some specimens. The adjacent beds seem to be chloritic schists; this ore affects the needle. In Talli Chandpura magnetic ore is found with haematite, and that in patti Talli Kalapat resembles specular iron ore.

(i) *Nagpur mines.*—Ores in the Bukhanda mine in patti Bichla Nagpur are also of a micaceous nature and seem to contain in parts minute crystals of quartz and pyrites, otherwise they much resemble graphite, and soil the fingers when touched. They do not influence the compass needle. The Jakhtoli mine in the same patti gives an ore which is probably a clay iron stone. It is of a light coffee colour and of little specific gravity. The Gilet mine close by gives an ore of a

similar quality. In malla Nagpur the ore is probably haematite. A vein of iron pyrites runs along the Alakhnanda in this patti near the village of Hath. The people call them "Sona re patthar" or gold stone and sell them to the pilgrims to Badrinath at high rates. The stones in the form of powder are used as an orpiment and the stone itself as a flint.

(ii) *Dassouli and Bachhansyun.*—The Mok mine in patti Malli Dasauli yields an ore, of which specimens appear to be magnetic, rich in metal, black in colour and crystalline or laminated in structure. It possesses highly magnetic properties. The Charbang mine in the same locality is of a similar character, very rich in iron and exhibits its polarity in the direction of the planes of lamination. The Dungara mine in patti Bachhansyun gives specimens which may possibly be an earthy hydrated oxide of iron. Its colour varies from ochry to dusky black. It is of little specific gravity, the clay seemingly predominating.

(iii) *Iriyakot.*—The ore of Pipli mine in patti Iriyakot is probably a hydrous form of sesquioxide of iron, the clay largely predominating. The Danda Toli mine in the same patti seems to give an argillaceous variety of brown haematite. Lohba affords a rich haematite, raised in large quantities. The Chalya mine in patti Painun gives a hard and brittle ore possessing the iron-black colour and metallic lustre of magnetic iron, but specimens of it fail to affect the compass needle in the manner characteristic of that ore. It may possibly on analysis be found to contain manganese. The iron of the mines in patti Bachhansyun is considered to be best in Garhwal, and sledge hammers manufactured from it have been found to last out the best English iron. This iron is peculiarly hard and yet not brittle.

(4) *Lead and Graphite.*

The lead mine existing in Nagpur is a fair one, but it is so inaccessible that its working seems well nigh impossible. Graphite is found in patti Lohba of Garhwal on the Karnprayag road and is there used as a dye.

(5) *Sulphur.*

There are two sulphur springs in Garhwal, the first lies close to the snowy range to the north-east of the temple of

Madh Maheshwar in pargana Nagpur; the other is on the left bank of the Biri river, 2 miles above its junction with the Alakhnanda. The water of this last is so very strongly impregnated that its existence can be discovered by the smell long before arriving at the spring itself. Neither is made use of in any way.

Besides these there are hot springs at Gauri Kund (on the road to Kedarnath), at Badrinath (called Tapt Kund) and at Tapoban, their temperature varying from 74° to 128°. The potentialities of these springs have not been investigated as yet.

(6) *Gypsum and soap-stone.*

Gypsum is found on the banks of the Alakhnanda near Panai and Nagrasu. There is also a dark-green variety which the people use to make into saucers and bowls. Experiments must be made to manufacture "Plaster-of-Paris" from it, which might be found useful in external plastering, as it is said to have the property of expanding on cooling.

Soap-stone—a white saponaceous stone resembling and used for the same purpose as pipe clay—is found in many places. In Garhwal various vessels used to be turned from it, which when polished had the appearance of marble. They retained liquid, but being extremely brittle were little used.

(7) *Asbestos and Silajit.*

Asbestos had been discovered in the hill to the north and at a short distance from Ukhimath. It is said to be of very good quality, but it is too far inland to be profitably worked. The people use it medicinally for dressing wounds and burns and as a wick for oil lamps.

Silajit, a native sulphate of alumina, is found in parganas Painkhanda and Nagpur. It is much sought after and is much prized as a panacea for all ills. It is sold to contractors annually by the Sub-divisional Officer of Chamoli in the month of March. The sale-proceeds have varied from Rs. 400 to Rs. 1,739 in a year. A list of Silajit contractors is given in Chapter V.

17. Forest resources.

Garhwal forests will be treated under two different heads, north and south, as they differ a great deal in their kinds of produce and the extent of exploitation.

(i) North Garhwal.

(a) *Timber*.—The outturn of North Garhwal is as follows :—

	C. ft.	Value. Rs.
1. Timber	197,277	57,858
2. Fuel	3,633,510	28,327
3. Minor produce, including grazing ... ..	...	30,121

This outturn of timber according to the species is :—

	C. ft.
1. Chir	146,883
2. Cypress	42,801
3. Miscellaneous	3,988
4. Spruce	1,317
5. Silver fir	1,203
6. Deodar	1,085

The trees to be cut are marked by the Forest department and the standing trees are sold for lump-sums. The purchasers do the felling and sawing. Logs of timber are also floated down to Hardwar where exists a huge market.

(b) *Manufacture of chir-tar*.—In 1921-22 two hundred and fifty tins of chir-tar were manufactured in Chamoli range out of Chilka wood. The methods of manufacture are old and horizontal retorts, made of 22 B. W. G. Galvanized iron sheets are used for the purpose. The outturn of 250 tins (125 maunds) was supplied to the Public Works department at Rs. 5 per tin or Rs. 10 per maund. The industry is in its infancy.

(c) *Minor produce—Grazing*.—The area closed and open to grazing are classified as under :—

	Sq. miles.	Per cent. of total.
(i) Closed to all animals for the whole year	1	0.65
(ii) Open to grazing of all animals for the whole year	1,375	90
(iii) Open to grazing of all animals, except sheep and goats	147	9.65

The above restrictions are in theory only; in practice the whole area is open to grazing excepting the first. Permits are issued to Bhotias and dues are realized from them. This year's income (1922-23) was Rs. 1,488 realised from four chowkis—Rudrprayag, Karnprayag, Narain Bagar and Gwaldam—established for the purpose. The following are the number of cattle grazed :—

	Cattle.	Sheep and goats.	Dues realised.
			Rs. a. p.
1. Rudrprayag ...	30	13,763	437 9 6
2. Karnprayag ...	70	27,602	881 13 0
3. Narain Bagar ...	20	2,437	81 2 6
4. Gwaldam ...	...	2,818	88 1 0
	<u>127</u>	<u>46,620</u>	<u>1,488 10 0</u>

Other minor produce were as follows :—

	Rs.
1. Sale of rignal bamboos ...	1
2. Sale of Bhojpatra bark ...	25
3. Medicinal herbs ...	20

There are right-holders and free grantees as well. The former are given timber at one anna per cubic foot and fuel at 3 pies per maund. The rights given to right-holders for the extraction of ringals are unlimited. Free grants of timber are given for bridges and school buildings. Other rights of the hillmen consist of free grazing for a limited number of cattle, cutting grass for home consumption and in a few cases for sale, collecting dry or fallen wood for fuel, wood for agricultural implements with the sanction of the Forest officers, timber, bamboos and Bhabar grass.

(d) *Fruit orchards.*—Garhwal is particularly well provided with fruit trees. Up to about 3,000 feet the mango and jamun of the plains are very common. Above them are wild apples, pears, medlars, cherries, apricots, plums and peaches. Oranges and limes, plantains and pomegranate grow everywhere. The walnut is found both wild and cultivated. Other wild fruits much appreciated are cornel (bamaura), figs (beru and timli), kaphal, the mulberry, the kilmora, the rasp and the black-berry. Nearer the snows occur black, red and white currants and gooseberries. Here also is found hazel, the nut which is

commonly known as the Bhotia badam. The Forest department maintains nurseries of fruit plants, for pioneering the fruit industry, at Joshi Math, Nagnath and Tharoli. Experiments are being made as regards the suitability of different kinds of fruit trees on different heights. At Joshi Math, out of 71 fruit trees planted in 1917 there remain 33 apples, 8 pears, 7 peaches and 10 cherry—in all 58 trees. The highest casualty were in peaches and pears, due for the most part to monkeys. Apple and cherry are doing very well. Grafts are also raised in the orchard. Till recently there were 21 peach, 41 apricot, 100 pear and two cherry. Sixty-four grafts were sold to villagers on a nominal price of 4 annas each. At Nagnath peach and pear have failed, but apple and cherry are doing very well. A small nursery is also maintained at Tharoli.

(ii) *South Garhwal.*

The forests are on the whole very accessible and are connected by a network of roads with the markets in the plains below them. The main lines of export are the Ganges river and the road running from the head of the Kohtri Dur past Saneh to Najibabad and the railway from Kotdwar to Najibabad. Saneh and Hardwar are important timber marts. Najibabad and Nagina are considerable trade centres, and at Roorkee in addition to the ordinary wants of the town the Government workshops require large quantities of fuel and charcoal.

(a) *Timber.*—The outturn in 1922-23 was as follows :—

	C. ft.	Value. Rs.
Timber	54,274	17,266
Fuel	3,765,206	34,588
Bamboo and ringal ... ..	...	1,805
Minor produce including grazing ... ..	...	45,517

The produce of timber according to the species were as under :—

	C. ft.
Chir	39,390
Sal	10,403
Miscellaneous	4,481

(b) *Minor produce*—

1. *Grazing*.—Grazing of sheep and goats in the forest area is more restricted in southern division in practice than it is in the northern.

	Sq. miles.	Per cent. of total.
Area closed to all animals all the year round	2	.5
Open to grazing to all throughout the year	106	25.4
Open to all, except sheep and goats ...	309	74.1

But these restrictions are not observed by the owners of sheep and goats, and hence no money could be realised this year from the grazers, even the Bhotias. In all free passes were issued for 6,705 buffaloes, 72,833 cows and bullocks, 2,045 sheep and goats, but in fact a far greater number of animals grazed than the above. The restrictions are being relaxed as recommended by the Forest Grievances Committee of 1921.

2. *Bamboo*.—For 1923-24 it was sold for Rs. 7,000 from the reserve forests of Palyalgaon, Silsari, Taulsari, Rawasan, Khair gaddi and Gwirala. The bamboo in the extensive and inaccessible forests of Ghori range are eagerly sought after; the quality of the stems is good and the Ganges river affords cheap carriage by flotation.

3. *Resin*.—Resin was collected by daily labour. The resources are still in infancy, but they are gradually expanding. This year 3 coupes with 14,910 channels were tapped and they yielded 670 maunds. It was delivered at Ramnagar at the cost of Re. 1-15 per maund. The work of enumeration, marking, cutting channels, fixing lips and cups, freshening, collection of resin and its carriage to Forest Dépôt are all being done by daily labour. Only the carriage of resin from Forest Dépôt to Ramnagar railway head via Chimta Khal is arranged on contract system. Real cost per maund per mile amounted to one anna 3 pies and carriage 6 annas 7 pies. The cost will decrease as initial cost on setting up new coupes come to an end. The labour is also acquiring experience and skill gradually, but there is still a shortage of labour supply. There are also transport difficulties which could be solved in the near future if Ramnagar-Chintakhal cart-road is extended into eastern Nayar Valley.

4. *Grass*.—There is some scarcity of grass and no revenue could be got from this source.

5. *Hides and horns* were sold for a lump-sum and Rs. 341 was the share of Forest department, the total being Rs. 600. This is unusually low; the average total is Rs. 1,500 annually.

6. *Fuel and charcoal* brought Rs. 43,352.

(c) *Chir-tar*.—Only 4 maunds of chir-tar was manufactured which was sold for Rs. 45.

18. Industrial education.

A great benefactor of Garhwal—Rai Ghana Nand Bahadur—has endowed Rs. 80,000 for educational purposes. This Chandra Ballabh Memorial Endowment Trust Fund yields an annual income of Rs. 5,000 which is being given to deserving candidates who prosecute their studies in colleges. Now Rai Bahadur-Pandit Tara Dutt Gairola has championed the cause of industrial education and has convinced his colleagues on the managing committee of the greatest utility of spending the amount on industrial advancement. He maintains that the main object of its founder was, he is perfectly sure, the encouragement of industrial development. Hence it is now decided that in future the great portion of the money will be spent on only those who receive industrial education and by their knowledge do some good to Garhwal. It is necessary that students should be sent all over India to receive practical industrial training and be helped in starting new industries in their own district.

19. Water power.

The water of the streams and rivers is employed for working the water mills for grain grinding purposes. It is at first diverted through a narrow channel to a considerable distance and then allowed to pass through a fall. At this place a wooden "fan" is fixed to which is attached the mill-stones. The "fan" revolves by the action of the current and turns the mill. There are 2,956 water mills in this district which yield an annual income of Rs. 12,587 to the district board. They are of two kinds:—(1) the agricultural water mills, and (2) the commercial water mills. The former are those which are constructed and used to meet the ordinary everyday requirements of the village in which it is situate, while the latter are those which are

erected to meet a special demand or for export purposes such as at Bhimtal, Lohaghat, Dogadda or on the pilgrim route to Badrinath and Kedarnath. The rent of these mills varies from Rs. 4 to Rs. 18 annually according to their outturn, while those of agricultural mills is Rs. 8 to Rs. 9 each at the average. There are three classes of agricultural mills :—(i) those running for 3 months in a year, (ii) those running for 4 to 6 months, and (iii) those running over 6 months. The total number of water mills has considerably decreased owing to high taxation. The following two statements will show the results of enhanced rents :—

I.—Agricultural mills.

No. of mills.	Barahsyun.	Landsdowne.	Chamoli.
1912-13	445	322	2,195
1921-22	331	348	1,976
Increase or decrease ...	-114	+26	-228
Rent as proposed in	Rs.	Rs.	Rs.
1912-22	2,253	1,089	8,282
Actual in 1921-13 ...	1,634	1,195	7,387
Increase or decrease ...	-619	+106	-895

II.—Commercial mills.

No. of mills.	Barahsyun.		Lansdowne.		Chamoli.		Total.	
	No.	Rent.	No.	Rent.	No.	Rent.	No.	Rent.
		Rs.		Rs.		Rs.		Rs.
1912-13 ...	105	902	26	196	343	2,557	474	3,655
1921-22 ...	44	369	14	121	252	1,881	310	2,371
Increase or decrease...	-61	-533	-12	-75	-91	-676	-164	-1,284

The comparative statement of both kinds of mills show that the total number has come down from 3,436 to 2,956 and their revenue from Rs. 15,279 to Rs. 12,587. This is due to the enhanced rate of taxation which has left the proprietors only a slight margin of profit. Those mills which did not pay

any profit at the enhanced rate had to be closed. A further enhancement is being considered at the new settlement.

20. Cattle census in the hill (1912).

Bulls and bullocks	...	...	171,794
Cows	...	...	272,801
Cow buffaloes	...	...	56,759
Male buffaloes	...	...	3,562
Young stock	...	...	169,649
Sheep	...	...	237,621
Goats	...	...	359,774
Horses	...	...	2,613
Mules	...	...	68
Donkeys	...	...	77
Plough	...	...	80,759
Carts	...	...	302
Jibus	...	...	199
Yaks	...	...	2

CHAPTER II.

DESCRIPTION OF, AND SUGGESTIONS FOR, THE IMPROVEMENT OF VARIOUS INDUSTRIES OF THE DISTRICT.

1. Building materials.

(i) *Stone*.—Stone for ordinary building purposes is available everywhere. It is quarried on a royalty system, the rate of which varies according to the importance of the place from Rs. 3-8 to Rs. 7 per ton. Only 13 men worked in stone quarrying in 1923, each getting 5 annas to 6 annas per day.

(ii) *Slates*.—Slates are also available at nearly every place, but a thin dark-blue quality is found in Lobha alone. An output of only 154 tons is reported on concession rates at 4 annas a ton. Only 19 men worked during the year each getting 5 annas to 6 annas per day. It is now becoming a fashion to have iron roofs. Iron sheets are being imported from the plains:

(iii) *Lime-stone*.—There are three distinct ranges of limestone hills in Garhwal; the first north of the Alakhnanda in Nagpur, the second running from Lobha patti to the Pindur and again to the Alakhnanda in patti Bachhansyun, and the third running parallel to the plains and south of the Nayar river. There are small patches of lime-stones scattered throughout the district, but not in such large quantities as in the above-mentioned ranges. The chief quarry is at Ranibagh near Srinagar. The rate of royalty at different places varies from Rs. 2-4 a ton to Rs. 15 a ton, but the average is generally Rs. 5 a ton. Over 600 tons were raised in 1923 and 60 persons worked.

2. Food grains.

(a) *Grain grinding*.

Wheat, barley, maize and other coarse grains are ground in water mills for local consumption. There are 2,956 mills in the district which do the above and they have to pay Rs. 6 to Rs. 18 each as annual rent to the district board according to their capacity for the use of water. Each mill involves a

employed both permanently and temporarily. There were in 1922 on the gardens 4 permanent garden labourers, 35 permanent outside labourers and 11 temporary outside labourers, making a total of 50 labourers in all. The plucked area of tea cultivation this year is 310 acres and not plucked is 20 acres. The total production of tea in the district was therefore 12,920 lbs. in all, out of which 3,920 lbs. was black and 9,000 lbs. green. This was exported to the Punjab, specially Amritsar for disposal.

3. Hardware.

(i) *Copper utensils.*

The copper industry of Garhwal owed its existence to the copper mines within the district as detailed in Chapter I. But although the mining industry has vanished owing to Government's prohibition, the manufacture of utensils is still being continued from the imported foreign copper sheets. There is no centre of much importance in Garhwal except Srinagar, which contains a large number of middlemen and about half a dozen of manufacturers. Otherwise, the copper industry is run on cottage lines in all the villages inhabited by copper-smiths called Tamotas. Copper sheets are imported by utensil dealers of Srinagar from Delhi and Bombay. These are either sold to the actual manufacturers or are advanced to them for manufacturing purposes on piece wages. It is estimated that the total import of copper sheets is 2,500 maunds worth Rs. 1½ lakhs to Rs. 1¾ lakhs.

The usual articles made from copper sheets are gagra, degs, parat, etc., all generally of huge dimensions and heavy weight. They have peculiar shapes and are typically the same as are used all over Almora and Nainital districts. The ready-made vessels are bought by village people and by Bhotia and Nepalese traders for their own use, as well as for export to Nepal and Tibet. There are 1,000 men engaged in the industry according to general estimate. Each man earns about Rs. 250 per year. Those living near Srinagar get a little more, as their turnover is comparatively greater owing to the proximity of the market. The wages paid to them are Rs. 15 per maund. The utensils are sold in the Srinagar bazar at Rs. 2-4 to Rs. 2-8 a seer and at a higher rate in the interior of the district.

Improvements.—(1) The workers living near Srinagar can be organized on co-operative lines. They can jointly purchase raw material from outside and sell the finished articles in the market.

(2) Hand-presses with suitable dies for stamping out the component parts of the vessels could be introduced through these societies for common use or in the small factories if they could be started by small capitalists.

(3) The introduction of turning, plating and polishing plant will improve the quality and quantity of the wares produced.*

(ii) *Khukris and daggers.*

There are half a dozen of Nepalese at Lansdowne who make sharp instruments like khukris and daggers. They are much in demand at the place, owing to the stay of many Nepalese soldiers with whom they are quite in fashion. Steel used in their manufacture is the broken pieces of the spring of railway waggons or the old files, bought annually in auction or otherwise at Rs. 15 per maund. Eleven maunds of steel worth Rs. 165 is used in the industry each year. Other raw materials are charcoal 27 maunds worth Rs. 67 from the local market, timber and leather worth Rs. 200 also from the neighbourhood. One man manufactures 36 khukris or 72 daggers annually and thus earns Rs. 150 per year as his wages. The supply of the one or the other depends absolutely on the demand of a particular article. Khukris are sold at Rs. 5 to Rs. 8 and daggers at Rs. 2 to Rs. 5 each according to the ornamentation on the blade and on the handle, as well as the superiority of the sheaths. The following is the average cost of production of a khukri or dagger :—

			Rs. a.
Steel	...	...	0 12
Wages	...	...	4 0
Charcoal	...	...	0 5
Timber	...	...	0 8
Leather	...	...	0 7
Total			6 0

<i>Daggers.</i>			
			Rs. a.
Steel	...	...	0 4
Wages	...	...	2 0
Charcoal	...	...	0 5
Timber	...	...	0 4
Leather	...	...	0 3
Total			3 0

In addition to the manufacture of khukris and daggers, the re-sharpening of old instruments and other miscellaneous as well as repair work is also undertaken. This goes to supplement the meagre income of the manufacturers.

4. Leather.

(i) Tanning.

Sixteen thousand hides and sixty thousand skins, mostly of dead animals, are available annually in the district. Most of these are utilized locally and tanned for making shoes, water buckets, etc. The tanning is done according to old methods and is very crude. It takes about six months for a set of skins to be tanned; although unsatisfactorily tanned, hides are turned out at a much quicker rate. Lime and bark of Kafal tree are used in the process, while lodh leaves give them a yellow colour. All the raw materials are available in the neighbouring forests. Hides are used for the soles and skins, specially of deer called Sabar for the uppers. The former are also used for making water buckets, etc., for agriculture purposes. Professional tanners devote wholly to the tanning of hides, while the manufacture of hides into articles is done by bucket-makers who are partially agriculturists. The tanning of skins is done by shoe-makers who ultimately use them in manufacturing native shoes. There are 45 professional tanners in the district according to the census of 1921. Their annual outturn is 9,800 hides and they earn Rs. 15 per head per month. The hides are sold to both the bucket-makers and the shoe manufacturers at Rs. 5 each. Besides the hides, 20,000 skins are also tanned by the shoe-makers, numbering about 111 families. Tanned skins are very rarely sold, their prices ranging from Rs. 2 to Rs. 5. Though

it is very difficult to say anything about their tanning wages (as the skins are generally used by the shoe-makers themselves), but it is estimated that by tanning alone they earn about Rs. 10 per head per month. The surplus from 6,000 hides and 40,000 skins is exported in a raw state to Cawnpore, Agra, Bareilly and Delhi.

(ii) *Leather working.*

Shoe-making.—The only centre of any importance, where good, soft, durable shoes are manufactured out of district tanned leather, is Srinagar. Otherwise the manufacturers are scattered throughout Garhwal: Lansdowne and Dogadda also claim a little over a dozen workers—mostly Nepalese at the former place and Punjabi Muhammadans at the latter—who fulfil the army requirements of repairs, etc., and manufacture some Punjabi shoes and ordinary boots in their leisure hours out of imported leather. This work, however, is insignificant. The Srinagar workers, who number about a score, use mostly the skins of Sabar (a kind of deer) for making shoes, while others use goat and other skins. The colour of the shoes is generally yellow, as it is quite in fashion in the hill districts. The soles are invariably made from locally tanned hides, but as the latter are not satisfactory they wear out very easily. There are 108 men and 111 women engaged in this industry. Men tan and clean the skins and cut the patterns, while women do a great deal of sewing work. Each family is said to earn Rs. 20 a month at the average. The total outturn is 40,000 pairs of native shoes annually. They are sold at Re. 1-12 to Rs. 4 per pair according to their quality.

(iii) *Water buckets.*

Water buckets are always made from the locally tanned hides. The manufacturers take this as a subsidiary occupation to their agricultural work. There are 65 such men and they earn an extra Rs. 10 per month per family. The total outturn of buckets is 15,000 annually and they are sold at Rs. 3 each.

5. *Miscellaneous.*

(i) *Gold refining.*

The sands of Alakhnanda, Pindar and Sona rivers used to furnish a small amount of gold dust. The Ganges also is

auriferous as far as Lachhman Jhula and Ramganga for a short distance below its junction with the Sona.

At present gold refining is only carried on at Sona Nadi between Laldarwaza and Dudhia. The land is under the Forest department and the Kalagarh division realises an annual fee of Rs. 25 from the work.

Local process of extraction of gold from sands.—The Dhunyas who wash sand for gold use a primitive looking but neatly made cradle of reed work. Sometimes the apparatus consists of a wooden boat-shaped trough, two shallow trays of wood, a bamboo sieve, half a gourd, a little quicksilver, some pieces of skin, scales and weights. The trough is 4 feet long, 18 inches broad and as many deep, with a hole near the bottom of one extremity. It is placed on the river's edge with the end in which is the hole, somewhat depressed. The sieve is formed of straight pieces of split bamboo laid side by side and is placed across the trough. One of the two persons employed in the operation spreads a trayful of sand upon the sieve, while the other turning up its edge so as to prevent any of the sand from being carried off, pours upon it a gourdful of water. This he repeats until the water having the finer particles of the sand in suspension filters through the interstices of the sieve and leaves the stones, pebbles and coarser substances on the surface. As a sufficient quantity of these washings accumulates in the bottom of the trough, the water drains off through the hole in its lower extremity and the mud which is left is then again washed for gold. For this purpose it is taken up in wooden trays and fresh water poured upon it. The trays are then turned round by the hand until the heavier and finer portions are separated when the largest grains of gold become visible and can be extracted. Then they are wrapped up in the pieces of skin. In order to recover the fine particles of the metal, the remaining portion of the sand is triturated with the quicksilver which is again driven off by heat. But the last process is hardly in vogue.

There are 10 to 12 persons, Dhunyas by caste, who refine gold by the primitive process described above. One person is said to earn one anna 6 pies to 4 annas per day as wages. This is because the work lasts only for 3 to 4 months, viz., January to April. During this time they turn out 5 to 7 tolas of gold. The wages and profits depend upon the number

of persons who combine to manufacture gold and their total output. In 1922 at the average 9 persons worked for 4 months and produced 7 tolas of gold. This at the rate of Rs. 25 per tola will be worth Rs. 175. After paying the Government revenue of Rs. 25, the net income of these workers was Rs. 150. This when divided among 9 persons and is spread throughout the year will give 4 annas per day per man. In 1923 at the average 11 persons worked for 3 months and turned out 5 tolas, worth Rs. 125, at the above rate. After paying the Government dues, the balance left was Rs. 100 only. This when divided among 11 persons and spread throughout the year gave one anna 6 pies per day per man.

Washing gold is not a profitable occupation at present, but undoubtedly a greater return might be had from this source by the use of mercury, as in Australia, for separating gold from sand.

(ii) *Bee keeping.*

Bee is kept by a small number of villagers near the forest area for their honey. Big holes are made in dead trees or crude wooden boxes are fixed up in green ones for the purpose and bees are allowed to collect honey in them. At fixed intervals the honey is taken out and sold in the nearest market. The black honey is considered to be unfit for human consumption and is generally given to cattle. The best honey produced by Mouna or domestic bee is available in the autumn season and is white in colour. It is much in demand as it is supposed to have a superior medical value. No estimate could be made regarding the total outturn in the district.

Api-culture should be encouraged on scientific lines among the agricultural classes and modern hives with movable frames should be introduced. This, I believe, could be done through one or two village schools as an experimental measure to begin with.

Improvements.

(1) *Movable frame.*—The type of detachable frame hive which finds favour with many authorities is the W. B. C. hive.

(2) The Hruschka extractor and Cowan's rapid extractor are used in western countries, but the latter is considered to be a better appliance. These are used to extract the honey

without damaging the comb. The bee will use the comb again as a store-house and will employ the energy saved, in gathering honey.

(3) Other use ready-made comb foundations to lighten the bee's labour. This also saves some labour and time.

(4) Bingham smokers are used in England and America, as well as bee veil to save the bee-keepers from the stings.

(5) The most favourable locality for api-culture is the place where there is an abundance of honey yielding flowers.

(6) Other detailed suggestions for the safety of the queen bee and the baby bees, as also the proportion of drones in the colonies; should be studied in the existing literature on the subject.

(iii) Fisheries.

Fish are found in all the streams and lakes more or less. The usual variety are Mahaser, Karaunt and Gair. They are caught by casting nets, phatiala (net) and cage traps. Attempts are being made by the Forest department in British Garhwal and by the State authorities in Tehri Garhwal at fish culture. The former claims to have put 20,000 trout fry into the Birhiganga river just above the Gohara lake a few years ago; while the latter has very lately planted 3 lakhs ova into the Assi and Hanumanganga streams. Fishing by unauthorised means in all streams has been prohibited. They are (1) poisoning of water, (2) use of dynamite, (3) catching fish by means of light at night, and (4) use of snares, traps, etc., without permission. The first two of the above are also prohibited under sections 4 and 5 of the Indian Fisheries Act, 1897. In Birhiganga the villagers are also prohibited from catching fish by net or erecting bar against the flow, for the protection of trout fish.

(iv) Jail industries.

There are no regular jail industries, as the jail is only on a small scale and the number of resident prisoners is hardly sufficient to do the routine work. Vegetable gardening, however, and aloe fibre mat-making are resorted to every now and then.

6. Stone carving.

Srinagar has for a long time been famous for stone carving. The workers besides making exquisite and delicate carving on stone buildings, use to manufacture beautiful stone models of deities and animals, as well as stone vessels like pyalas and koondees for daily household use. The economic pressure on the local population owing to constant famines in the district and the failure of the manufacturers to find outside markets, due partly to the lack of enterprise and partly to the difficulty of communication, have all combined to drive off the local industry into oblivion. One Mr. Connell (District Engineer) had tried to improve the designs and models by his suggestions a few years ago and he is reported to have succeeded a great deal in his work. But the industry could not be revived owing to the absence of any demand. The stone workers, however, still carry on their precarious living and are now employed only when a temple is being erected. They charge Re. 1 per day, but as the work is very rare, they earn only living wages on the whole.

7. Textiles.

(i) Wool manufacture.

Raw materials.—There are 237,621 sheep and 359,774 goats in Garhwal district, yielding 5,940 maunds and 4,497 maunds of wool respectively each year. Over 3,000 maunds of wool is also imported from Tibet at Rs. 20 to Rs. 25 per maund. Thus a total of 13,660 maunds is available annually in the district. Both the wools are inferior to Australian product, but they would make a good homespun or cloth of the Cheviot class. They, however, do not take dye satisfactorily. Only a small proportion of the available wool (2,270 maunds) is utilized locally and the rest is exported to submontane marts, whence it goes to Cawnpore, Amritsar, Najibabad and other centres of woollen industry in the plains. The prices vary from Rs. 40 to Rs. 100 a maund according to the distance from the Bhabar.

(a) *Spinning.*—One thousand, three hundred and forty-five men are engaged in spinning wool. It is done throughout the day, even while walking, by means of suspended spindles locally known as Takli or Taku. A man spins 2 to 3 chataks

of good fine yarn or 5 to 6 chataks of coarse yarn in a day and earns 4 annas to 6 annas per day thereby. But these are only nominal wages, for the spun yarn is never sold to anybody. It is utilised by the women of the families in manufacturing woollen fabrics. The annual outturn of spun yarn is estimated to be at least 2,270 maunds, worth Rs. 1,81,600 to Rs. 2,72,400.

(b) *Weaving*.—There are 1,315 women engaged in weaving various kinds of blankets called Thulmas, Chutkas, Pankhis as well as some quantity of cloth called “Chuu” and “Bala” and striped carpets of coarse wool called “Chera.” They also manufacture coarse cloth called “Choga” and a fabric of mixed wool and pashm known as “Dhussa.” Goat’s hair is spun by “Dherna” and “Charkhi,” and made into a coarse cloth (called Dhounkas) suitable for overcoats. Weaving is carried on in a primitive manner without the aid of shuttle, which is replaced by a stick to which the weft thread is attached and worked through the threads of the warp. The wages for weaving are 8 annas a yard ($1\frac{1}{2}$ to 2 feet wide) or Re. 1 a seer. The total annual outturn of woollen fabrics is 2,270 maunds. Light blankets and Pankhis are sold at Rs. 6 each, Thulmas at Rs. 12 to Rs. 20 and Chutkas at Rs. 10 to Rs. 25 according to the weight, texture and the size of the article. They are sold in the local fairs and are bought by the residents of the place for local use and for export to Bhabar and Tarai.

Improvements.

1. *Trade facilities*.—The import of wool from Tibet is indispensable for the continuance of woollen industry of Garhwal, Najibabad and other centres in the plains; till the local breed of sheep is improved. It should also be sufficiently cheap, so as to compete with the Punjab and Bikaner wool. At present, the prices of hill wool in the markets of western United Provinces are almost prohibitive. If trade facilities, such as better roads, cheap credit, safety of person and goods, and stabilising of Tibetan coin Tanka, are given the object could be achieved easily.

2. In the meantime it is absolutely necessary that immediate steps should be taken to improve the local breed of sheep and goats. The hill sheep are quite different and much

better than the breed commonly kept in these provinces. If scientific sheep-breeding is undertaken, it would greatly improve the quality as well as the quantity of indigenous wool.

3. Simultaneously with sheep-breeding operations, it is also necessary to spread industrial education, specially in connection with the most popular industries of wool spinning and wool weaving. A weaving school at Srinagar, or higher still at Joshimath, is greatly needed. If this be not practicable immediately, scholarships should be given by the district board and "The Chandraballabh Memorial Trust" to deserving candidates who may pick up the improved methods in a short time and may apply their knowledge in starting small factories in the district itself.

4. Simple, handy and, if possible, portable spinning machines are necessary for spinning wool. But as no reliable and workable machine is available in the market, it is better to introduce ordinary good Charkhas used in the Punjab and Kashmere for the purpose. The yarn spun on the spinning wheel is considered to be stronger than the yarn spun by suspended spindles.

5. Fly-shuttle pit-loom should also be introduced to improve the quantity and quality of the fabric produced. These are already worked in the plains with great success and they will also prove of immense value in the hills.

(ii) Other fibres.

(a) Hemp fibre.— The bhang yielding hemp (*Cannabis sativa*) is grown to some extent at an altitude above 4,500 feet in many villages in this district, specially those inhabited by *Pavilas* and *Doms*. There are two varieties of hemp plant: *phulanga*, the male plant, yields a finer fibre which is woven into a cloth used as wearing apparel, while *kalanga*, the female plant, produces *charas* and yields a coarser fibre used for manufacturing small grain bags. The plants are ready in September, October and November, when they are cut, tied in bundles and steeped in water. After 10 or 12 days the fibres are taken out by hand, spun into thread and woven into a most durable hemp cloth called *bhangela*. It is estimated that there are over 600 acres of land under hemp, which annually produce at least 2,448 maunds of plant, yielding 153 maunds of hemp fibre.

There are 68 persons employed in spinning hemp fibre and weaving *bhangela* cloth. One man at the average spins 4 chataks a day and spinning and weaving is done simultaneously. No wages can be ascertained as the cloth is woven by the workers generally for their own use and only a small surplus is sold out. The annual outturn is 153 maunds. The cloth is woven in pieces of $2\frac{1}{2}$ yards by one foot and two or three inches. Three pieces sown together are sufficient for all the clothing required by an adult male or female. This is the only cloth woven by the poorer classes and is considered to be most durable material of great strength. The price of each piece varies from Re. 1-8 to Rs. 2-8 according to its quality.

(b) *Kapasi* fibre is the cotton like tomentum growing on the under side of the leaves of *Gerbera lanuginosa*, a plant known as *kapsula* or *purbotu* growing wild at an elevation between 4,000 and 8,000 feet. The leaves are collected in the rains, and before they wither the tip of the leaf is broken off for about half an inch and the *kapasi* is stripped off in one piece and twisted into thread on an ordinary spinning wheel. The yarn is woven into blankets and more specially sacks, which are of great strength and durability, lasting (in constant use) twelve to twenty years. They make excellent flour sacks and are sometimes so closely woven as to hold water for a short distance. The sacks generally measure 3 feet 6 inches deep by one foot 10 inches broad, weighing about 2 seers and costing Rs. 2-8 to Rs. 3-8 each. They are scarcely used beyond the limits of the tract where the plant grows.

Some cotton is also grown in Garhwal and it is classed as "fine," but the amount is so small that it hardly fulfils the need of those who grow them. The cultivation, however, can be extended a great deal.

CHAPTER III.

INDUSTRIAL POSSIBILITIES.

Garhwal has the same resources for its industrial development as its sister district Almora, though these resources are on a much smaller scale. It has its mineral—Iron, copper, etc., and its forest produce, water power and Tibetan imports of wool, borax and the like. All of these require exploitation and utilization. But the difficulties of communication are still greater here than elsewhere. In this matter Garhwal is the most backward district. Hence the first necessity of the district is cheap transportation and easy communication.

1. Easy communication.

There is no cart-road in the district, except the one which runs from Kotdwar to Lansdowne. This too is only busy for about 10 miles (up to Dogadda); for transit into the interior of the district, ponies, mules and coolies are invariably employed. The improvements in communications are absolutely necessary and the advantages of a forward policy in this matter are as follows:—

- (1) the district will be protected from constant famines;
- (2) it will lower down prices of all commodities, including food grains, by constant and full supply;
- (3) it will mitigate the cooly system by providing better facilities for transit;
- (4) it will help the development of agriculture on right lines; and
- (5) will also set free hill lands for growth of fancy crops;
- (6) it will help in the cheap extraction of forest produce and thus enhance the Government revenue.

The roads which require particular attention are as under:—

- (1) Pishikesh, up the Ganges valley to Srinagar should be a cart-road. This is most important route which should also be a main trade route into

Garhwal and Tehri (East). Wheeled transport is absolutely necessary for the development of Garhwal, its forest and agricultural resources and for mitigating the hardships of 30 to 35 thousand pilgrims that pass on to Kedarnath and Badrinath each year. If the proposed Rishikesh-Karnprayag Railway matures up, then the road will not be imperative, otherwise a cart-road should immediately be constructed.

- (2) Najibabad-Kotdwar road. Most of the road lies in the Bijnor district and both the districts must co-operate to make it *pacca*. It would connect Lansdowne by motor with Najibabad on the main line.
- (3) Dehra Dun-Tehri road is under survey. The native state under which it lies should give it an early attention.
- (4) Bhatronj Khan to Ganai and then to Lobba.

2. Rishikesh—Karnprayag Light railway.

The accruing advantages will be as follows :—

- (a) *Passenger traffic*.—This is the main pilgrim route to Kedarnath and Badrinath, through which 30 to 35 thousand pilgrims pass annually. If facilities are given, the number will treble if not quadruple. The scheme will be very popular among the Hindus and many of them may largely finance the scheme and forego the high rate of interest. The railway will pass through a most populous tract and the population within easy reach of it will be at least quarter of a million. A large number of Garhwalis living outside visit their homes annually specially the Garhwali soldiers. And equal number of men visit the hills to earn as coolies year after year.
- (b) *Development of the district*.—Garhwal depends to a large extent for all its commodities on the plains. Food grains and other articles are imported heavily for local consumption. In the Forest department the resin industry cannot be started in vast *chir* forests owing to lack of communication with

the plains; then there is the heavier timber which cannot be transported by means of rivers. Agricultural development will also greatly advance. A great variety of most valuable crops could be grown; oranges, apples, pears, peaches and cherries all grow very well. Spices (ginger and turmeric), medicinal herbs like Belladonna and possibly *charas* (wild hemp grows freely) could all be developed. There is ample field for agricultural experiments.

The Tibetan trade via Niti pass, all goes through Karnprayag. The Kiunlung pass is one of the best in Western Tibet. The annual value of the trade is over 2 lakhs and is capable of considerable development.

(c) *Protection against famine.*—Garhwal's population has quadrupled in a century of British rule and is now about 500,000. It is still steadily and rapidly increasing. The district is probably the most densely populated in the world per cultivated square mile, the incidence being almost exactly 1,000. In the north this incidence is far higher than in the south. In places it is as much as 3,000. The result is that famine recurs every now and then. Apart from this, villagers in the remote north would rather die of starvation at home than venture far south of Karanprayag in the hot weather.

Under these circumstances a light railway is imperative, and it will easily pay its way if it is started. If extensions of Rohilkhand and Kumaun Railway are also made up to Delhi and Agra, the commerce of the hills will be greatly developed.

3. Aerial ropeway.

A cheaper transportation is a *sine qua non* for the future industrial and commercial development of the district. The aerial ropeways will carry the goods at the cheapest rate from the Tarai to the hills and *vice versa*. A scheme for its development in Kumaun division is in the hands of the Government and steps should be taken to materialise it as early as possible. There is a great traffic of goods from Dogadda to Pauri and Srinagar and further north to Badrinath; and this route should

be connected from end to end. The ropeway from Dogadda to Lansdowne will be difficult, as it will cost at least 5 lakhs of rupees for only damming the Khoh river which dries up in the summer, for generating water power; and this line will wholly be to the benefit of the military. It is yet a question whether in times of financial stringency this part of the scheme will be worth taking up.

4. Water power.

Water power is available in the district, and if aerial ropeways are worked by electricity, both large and cottage industries could be worked by the same power. In the meantime attempts could be made to utilise the simpler method of water mills in working smaller industries. The process of water mills is given in Chapter I.

5. Woollen industry.

Raw wool is available in the district, and is also imported from Tibet. The local produce is 4,455 maunds in British Garhwal and 1,500 maunds in Tehri State, whereas 3,223 maunds is imported from Tibet annually. Wool spinning and wool weaving should be given an impetus by introducing improved methods of production and by employing simple handy machinery. Spinning by "Takwa" should be replaced by ordinary or improved charkhas, and old Bhotia looms should be supplanted by fly-shuttle pit-looms of the plains.

6. Weaving school.

To introduce the improved methods of wool weaving and for popularising improved apparatus it is absolutely necessary that a weaving school should be started at once by the district board. If this is not possible immediately, apprentices should be sent by the district board and by the Chandra Ballabh Fund Committee to learn the new methods in weaving schools in the meantime.

7. Hemp weaving.

Hemp weaving is another languishing industry which requires immediate attention. Hemp cloth is woven in all villages and it is used by men and women in the further north. Improved methods should be introduced in this industry as well. The proposed school will also solve the difficulties in hemp weaving.

8. Stone carving.

Stone carving industry is practically dead and needs immediate revival. Stones of the best quality and of innumerable shades and colours are found in the bed and on the banks of the Alakhnanda. There are stone carvers still living at Srinagar who use to make stone cups, etc., but owing to the lack of demand for stone articles in that locality they have given up the industry. They, however, dress stones for building purposes and make stone articles only to order. The industry needs reorganization.

9. Match-making.

Spruce and silver fir exist in Garhwal forests and are at present sold out for purposes other than match-making. Twelve hundred cubic feet of the latter and thirteen hundred cubic feet of the former were sold in 1922-23. It is necessary to have it at concession rates below 10 annas per cubic feet if it is to be used for match-making industry. The present market rate for these timbers is over Re. 1 per cubic foot. If the concessions are given, as they were allowed to the defunct Baréilly Factory, then there are greater chances of this industry being successful now than ever before. The import duty levied on foreign matches has increased the margin of profit of the local industry. In consequence small factories run on cottage lines have been springing up in Bengal and Bihar. One has also started work at Lucknow and another is going to do so at Muttra. They require a capital of about Rs. 10,000 each and are worked by small machines made at Calcutta. The following are the firms which manufacture the machinery :—

1. Doctor Mahendro Chandra Nandi, Pioneer Iron Works, Comilla, Bengal.
2. Ghatak Iron Works, Rai Bahadur Road, Behala, Calcutta.
3. Bhawani Engineering and Trading Co., 122-1, Upper Circular road, Calcutta.
4. B. C. Nandi and Co., Viya Sagar Street, Calcutta.
5. B. Birendra Chandra Sen, Baraset, Chandarnagore.

6. Calcutta Industries, Limited, 71, Canning Street, Calcutta.

10. Medical herbs.

Garhwal is said to be the most important place as regards the medicinal herbs. Several of the Ayurvedic and Yunani medicines are made from the herbs of the hilly district and used in the plains. But all of them have not been discovered. *Brahmi*, a brain tonic of highest order, grows in this part. Poisons like *Teliya*, *Phatkiya* and *Haldiya*, and anti-poisons like *Nirvishi*, *Zaharmohra* and *Bansandhura* are all available, mostly on *Badrinath* side. But it is impossible for a layman to recognize them.

Medical Mission.—The herbs grown in the hills need discovery and a permanent agency for their growth and exploitation. It is therefore absolutely necessary that a medical mission of leading *vaid*s and *hakim*s should travel in those parts and bring to light the hidden knowledge for the benefit of humanity.

11. Mining Industry.

The information regarding mines has been given at length in Chapter I. Iron and copper, etc., are available in the district and the mines have been worked so late as 1918-19. But owing to its languishing state, it has been stopped by the Government. It is necessary to start fresh experiments on improved lines. If the experiments prove successful, the mining industry could be revived. The advent of ropeways and the electric power will give greater facilities to this work.

12. Agricultural Industries.

Subsidiary to agriculture, there are many profitable industries that could be worked on cottage lines. These, if encouraged, will add to the income of poor tenants and landowners. (1) *Seri-culture* (silk-worm rearing), (2) *Api-culture* (bee keeping), (3) *Lac-culture*, (4) *Dairy farming* (specially ghee) and poultry keeping, (5) *Fruit growing*, (6) *Lemon grass* (basis for perfumery), *Saffron*, etc., and (7) *Spices*, etc., are specially adaptable for the hill conditions.

Among the agricultural produce, cotton, sugarcane, oil-seeds and tobacco are worth experimenting. A large amount of sugar, oil and tobacco is annually imported from the plains. Owing to the variety of climate and soil, it is not impossible

to cultivate these things here. If grown on a large scale they will make the district prosperous.

13. Ghee and Honey.

Both of these industries are carried on in the district and have been dealt with in Chapter II. But much could still be done for their further expansion. Both articles are universally consumed and are considered to be of the best quality available in United Provinces. It is therefore necessary that they should be systematically organized and their ways of production improved. For large scale api-culture a favourable locality where there is an abundance of honey yielding flowers is quite indispensable, and the necessary adjunct will be the introduction of detachable frame hive, rapid extractors, comb foundation and smokers as detailed on page 33.

14. Sheep-breeding.

The sheep and goats of the hill districts are quite different and much superior to the breed commonly kept in United Provinces. The wool produced by them is not so good as that of Tibetan stock, but even the latter is not like the wool of Australian breed. The reason is that the cold and dry climate of Tibet produces "Jara" wool which, though long and soft, is deficient in the elasticity and wavy curl, so necessary to the manufacture of the finer classes of fabrics. The breeds kept in the hills are; (1) the Hunia, kept by the Bhotias on the higher ranges, a black-faced and polycerate variety of sheep largely used as a beast of burden, (2) the "Jumbli" or "Gharan," an inferior breed found on the lower slopes of the hills, yielding $\frac{3}{4}$ seer of coarse wool, and (3) the "Barual" sheep bred to a small extent in Garhwal. The yield of wool from these is 12 or 14 chataks annually per sheep, compared to the 6 or 7 pounds of an English sheep. Hence there is a great need of a scientific sheep-breeding in the district, so that the quality may be improved and the quantity increased. Few animals adapt themselves so readily to the diversities of climate and pasturage as the sheep, and few are most susceptible to improvements induced by the care of man. Experience has shown that the better class of wools for clothing purposes are produced in fairly temperate climates. Private enterprise has never taken much interest in breeding sheep except for fighting purposes, and the result has been in the direction of

heavy horns and powerful hind-quarters. The various attempts made at improving the breed of sheep in India have been reviewed in the Dictionary of Economic Products. Efforts to improve the breed at Agra and Dehra Dun failed, as the merino lambs could not bear either the intense heat of May and June or the continued dampness of the rainy season. Both of these difficulties can be avoided, if sheep breeding is started in the hill districts of Almora, Garhwal and Naini Tal. But attempts should be made to improve the indigenous strain before introducing foreign blood. If sheep-breeding is put on a sound and scientific basis, it will be the strongest backbone of the woollen industry and the hill districts will become the reservoir of an unlimited supply of the finest wool in these provinces.

15. Charcoal as a wonderful fertilizer.

Charcoal has been proved to be most astonishing article to make use of for all purposes of cultivation. But in the hills, it has always been used for burning purposes only. If it is popularized as a fertilizer, it would improve the cultivation and increase the revenue of the Forest department. The matter has been dealt with in fuller details in my Almora Survey Report.

16. Slates and pencils.

The existence of good quarries should encourage people to make experiments in manufacturing slates and pencils for writing purposes. If the experiment proves successful, it would create a monopolistic industry in Garhwal.

17. Essential oil.

Kasturi grass, Nil Kamal, Podina, Kala Zira, Ajmoda, Jwan, tin tin, Gulab and Taj are said to be the essential oil yielding plants. But they are generally found in higher regions. It is worth investigating their industrial possibilities. If found sufficiently paying their growth and exploitation can be organized.

CHAPTER IV.

STATISTICS.

1. Building materials.

*Stone—**Labour.*—13 men.*Wages.*—5 to 6 annas a day.*Outturn.*—109 tons.*Price.*—Rs. 3-8 to Rs. 7 per ton.*Slates—**Labour.*—19 men.*Wages.*—5 to 6 annas a day.*Outturn.*—154 tons.*Price.*—4 annas a ton (concession rate).*Lime-stone—**Labour.*—60 men.*Wages.*—6 to 8 annas a day.*Outturn.*—600 tons in 1923.*Price.*—Rs. 5 to Rs. 15 per ton.

2. Wheat and other grains grinding.

*Raw material—**Export—**Quantity.*—6,528 maunds.*Place of destination.*—Tibet.*Price.*—Coarse grain Rs. 5 to Rs. 6 per maund.*Wheat.*—Rs. 20 per maund.*Import.—**Quantity.*—600,000 maunds.*Place of origin.*—District Bijnor and other neighbouring districts.*Manufactures—**Number of mills (water).*—2,956.*Capital.*—Rs. 2,95,600.*Labour.*—2,956 men, women and children.*Wages.*—5 to 8 annas per maund or 3 seers of flour from one maund of grain.*Outturn.*—Over 1,000,000 maunds.

3. Other edibles (ghee manufacture).

Raw material—

Export.—Nil.

Import.—Nil.

Manufacture—

Labour.—25,000 families.

Wages.—Rs. 14 to 15 per family monthly.

Outturn.—7,500 maunds annually.

Price.—12 chataks to a seer for a rupee.

4. Hardware.

(i) *Copper utensils.*

Raw material—

Export.—Nil.

Import.

Quantity.—2,500 maunds.

Place of origin.—Delhi and Bombay.

Price.—Rs. 1½ lakhs to Rs. 1¾ lakhs.

Manufactures—

Labour.—1,000.

Wages.—Rs. 15 per maund or Rs. 250 per year.

Outturn.—2,500 maunds.

Price.—Rs. 2-4 to Rs. 2-8 per seer.

(ii) *Khukri and dagger manufacture.*

Raw material—

Export.—Nil.

Import.

	Steel.	Cha. coal.	Timber and leather.
Quantity ...	11 maunds	27 maunds	Not known.
Place of origin ...	Carvn; ore...	Local ...	Local.
Price	Rs. 165 ...	Rs. 67 ...	Rs. 200.

Manufactures—

Labour.—6 men.

Wages.—Rs. 150 per head per year.

Outturn.—36 khukris or 72 daggers.

Price.—Khukri Rs. 5 to Rs. 8, daggers Rs. 3 to Rs. 5.

5. Leather.**(i) Tanning.***Raw material—**Import.—Nil.**Export—**Quantity.—Hides 6,500, skins 40,000.**Destination.—Meerut and Rohilkhand divisions.**Price.—Hide Rs. 4 each, skins 12 annas, to Rs. 3-8 each.**Manufactures—**Labour.—45 hide tanners, 111 skin tanners.**Wages.—Rs. 10 to Rs. 15 per month.**Outturn.—9,800 hides, 20,000 skins.**Price.—Rs. 5 per hide, Rs. 2 to Rs. 5 per skin.***(ii) Leather working.****(a) Shoes—***Labour.—108 men and 111 women.**Wages.—Rs. 20 per month per family.**Outturn.—40,000 pairs annually.**Price.—Re. 1-8 to Rs. 4 each.***(b) Buckets—***Labour.—65 men.**Wages.—Rs. 10 per month per family.**Outturn.—15,600 buckets annually.**Price.—Rs. 3 each.***6. Tea.***Number of plantations.—5.**Total area under tea as last year (1921).—565 acres.**Area abandoned during the year.—275 acres.**New extensions.—40 acres.**Total area under tea this year (1922).—330 acres.**Area under occupation of planters, but not under cultivation.—1,586 acres.**Total area of plantation.—1,916 acres.**Garden labour, permanent.—4.**Outside permanent labour.—35.**Outside temporary labour.—11.**Plucked area during the year.—310 acres.*

Not plucked area.—20 acres.

Manufacture.—3,920 lbs. black; 9,000 lbs. green.

7. Gold Refining.

Raw material—

Export—Nil.

Import.—Nil.

Manufactures—

Labour.—5 men, 5 women, 2 children, equals 12 persons.

Wages.—One anna 6 pies per day, per person.

Outturn.—7 tolas (in 1922) and 5 tolas (in 1923).

Price.—Rs. 25 per tola.

Improvement.—Mercury should be used for separating gold from sand.

8. Woollen Industry.

Raw material—

Import.—

Quantity.—3,000 maunds.

Place of origin.—Tibet.

Price.—Rs. 20 to Rs. 25 per maund.

Export—

Quantity.—11,490 maunds.

Destination.—Submontane marts.

Price.—Rs. 40 to Rs. 100 a maund.

Spinning—

Labour.—1,345 men.

Wages.—4 to 6 annas per day.

Outturn.—1 chatak to 3 chataks a day or 2,270 maunds.

Price.—Rs. 1,81,600 to Rs. 2,72,400.

Weaving—

Labour.—1,315 women.

Wages.—8 annas a yard ($1\frac{1}{2}$ to 2 feet wide) or Re. 1 a seer.

Outturn.—270 maunds.

Price.—Thulmas, Rs. 12 to Rs. 20.

Chutkas, Rs. 10 to Rs. 20.

Pankhis, Rs. 6.

9. Other fibres.

Raw material—

Export.—Nil.

Import.—Nil.

Manufactures—

Labour.—68 persons.

Wages.—Made for self.

Outturn.—153 maunds.

*Price.—Rs. 2 per piece ($2\frac{1}{3}$ yards by 1 foot*3 inches).*

CHAPTER V.

DIRECTORY.

1. List of cloth merchants.

Debi Sahai Jai Narain, Dogadda and Kotdwar, Garhwal.
 Ramchandra Dalu Ram, Dogadda and Lansdowne,
 Garhwal.

Shankar Das Sohan Lal, Dogadda, Garhwal.
 Lallu Mull Ram Chandra Mull, Dogadda, Garhwal.
 Ramchandra Chunni Lal, Dogadda, Garhwal.
 Garhwal Byavasaya Bhandar, Dogadda, Garhwal.
 Mangni Ram Ram Krishna, Dogadda, Garhwal.
 Nazir Ahmed, Dogadda and Kotdwar, Garhwal.
 Ghasi Ram Tula Ram, Dogadda and Kotdwar, Garhwal.
 Data Ram Mangat Ram, Kotdwar, Garhwal.
 Gauri Shankar Banwari Lal, Kotdwar, Garhwal.
 Fateh Chand, Kotdwar, Garhwal.
 Suraj Mull Mahadeo Prasad, Lansdowne, Garhwal.
 Rahmatulla, P. O. Srinagar, Garhwal.
 Azimulla, P. O. Srinagar, Garhwal.
 Behari Lal, P. O. Srinagar, Garhwal.
 Ishari Singh, P. O. Srinagar, Garhwal.
 Karimuddin, P. O. Srinagar, Garhwal.
 Shobha Julaha, P. O. Srinagar, Garhwal.

Also Tibetan goods like, Musk, Silajit, Yak's tails and
 Borax :—

Kedar Nath Ramlal Sah, P. O. Pipal Kote, Garhwal.
 Bhauna Shivalal Sah, P. O. Pipal Kote, Garhwal.
 Mohanlal Bhawani Dass, P. O. Pipal Kote, Garhwal.
 Siri Ram Tika Ram Sah, P. O. Pipal Kote, Garhwal.
 Gobindlal Sah and Bros., P. O. Pipal Kote, Garhwal.
 Ram Lal Sah, P. O. Joshi Math, Garhwal.
 Shyamlal Govindlal Sah, P. O. Joshi Math, Garhwal.

2. List of cloth and utensil dealers at P. O. Srinagar,
 Garhwal.

Chandi Prasad Mangal Sen.
 Manni Lal.

Shambhu Nath.
 Ganga Prasad.
 Radhey Lal.
 Ram Krishen.
 Shambhu Mull.
 Hira Lal.
 Gokul Pershad.
 Nathmal Das.
 Fatooh Shah.
 Bishambhâr Lal.
 Munshi Ram.
 Babu Ram.
 Kishori Lal.
 Chhajmal Das.
 Narain Das.
 Bhao Lal.
 Bassoo Deb.
 Pratab Singh.
 Mathura Prasad.
 Manohari Lal.
 Partab Singh Jaini.
 Bansi Lal.
 Ramchandra.
 Sundar Lal.
 Neem Chand.
 Bala Dutt.
 Balak Ram Shah (utensils only).

3. List of forest contractors (timber, firewood and bamboo).

Khan Bahadur Sheikh Safdar Hussain Sahib, Najibabad.
 Sheikh Hikmat-ullah, Najibabad.
 Lala Narain Das, Barhapur, Bijnor.
 Abdul Aziz Khan, Najibabad.
 Pandit Mul Chand, Najibabad.
 Sheikh Ghulam Maula, Kotdwar.
 Thakur Gobind Singh, Lansdowne.
 Babu Ajodhia Parshad, Kotdwar.
 Babu Ajodhia Parshad, Najibabad (firewood).

4. List of charcoal contractors.

Lala Kashi Ram, Lansdowne, Garhwal.

5. List of tobacco merchants.

Genda Mull Gopi Nath, Dogadda, Garhwal.

6. List of hide and skin merchants.

Rahmat-Ullah, Dogadda, Garhwal.

Jitar Singh Rawat, Mauza Jaintoli, Jainitalesyun, P. O. Patal, Garhwal.

7. List of grass contractors.

Badri Singh, P. O. Adwani, District Garhwal.

Ratan Singh, P. O. Kanskhet, District Garhwal.

Atma Ram, P. O. Ranghat, District Garhwal.

Dewan Singh, P. O. Dwari Khal, District Garhwal.

Ganga Singh, P. O. Deosa, District Garhwal.

Mayalu, P. O. Dadamandi, District Garhwal.

8. List of khukri and sharp instrument manufacturers.

Nathu Mistri, Lansdowne.

Dhanbir Mistri, Lansdowne.

Ratna Mistri, Lansdowne.

9. List of Tea Estates.

Beni Tal Tea Estate, District Garhwal.

Silkot Tea Estate, P. O. Lohba, T. O. Karnprayag, (Garhwal).

Gadoli Tea Estate, Pauri, Garhwal.

Musiti Tea Estate (closed), Garhwal.

Gwaldam Tea Estate Purchased by Government in 1919.

Talwari Tea Estate for the colonization of soldiers.

10. List of silajit contractors.

Kunwar Jai Narain, Badri Nath, Joshi Math, Garhwal.

Lala Ramlal Sah (cloth merchant), P. O. Joshi Math, Garhwal.

Lala Tula Ram Sah (cloth merchant), P. O. Joshi Math, Garhwal.

Lala Moti Sah, P. O. Pipal Kote (Garhwal).

Lala Premal Sah, P. O. Pipal Gote (Garhwal).

Pandit Mahidhar Sharma, P. O. Karnprayag, Garhwal.

11. List of general merchants.

Shyam Lal & Co., Lansdowne.

Mohan Lal Sah & Co., Lansdowne.

Dhanilal Jiwantal Sah, Lansdowne.

CHAPTER VI.

MISCELLANEOUS.

Tehri State.

Boundaries—

North.—The Punjab states of Rawain and Bashahr and Tibet.

East and South.—British Garhwal.

West.—Dehra Dun.

Rivers—

1. Ganges with its tributary Jadhganga.

2. Jumna.

3. Supin and Rupin—combined called Tons.

Springs.—Number of hot springs near Jumnotri Temple from which water issues at a temperature of 194.7° F.

Roads.—There are about 263 miles of kachcha roads, chief of them are from Tehri to Mussoorie, to Hardwar, to Deoprayag and to Gangotri.

Area and population.—Area is 4,200 square miles and the population (in 1920-21) was 318,482 souls.

Agriculture.—Cultivation is about 250 square miles and 88 per cent. of the total population is supported by land. Rice, small millets (such as Jhangora, and Mandua) and wheat are the staple food crops; potatoes are also largely grown. Irrigation facilities are very few.

Forest.—The forest area is 2,134.8 square miles and form a very valuable property. This includes chir and deodar forests in Tons valley, sal forests of Sankot, *ban* forest of Mussoorie leased to British Government, and excludes snowy and alpine grassy tracts yet unsurveyed. A large amount of oak, spruce, silver fir and boxwood is also available. Timber is rafted down the rivers. Attempts are being made for the replantation of 6,017 mulberry plants which are ready for the purpose. Resin to the extent of 2,154 maunds was also extracted, and as the Bareilly rates were low, it was made over to Raj Ghananand Bahadur at Rs. 11 per maund. Orchards

at Magra are progressing satisfactorily. Another is being planted at Munikareti near Rishikesh.

Trade.—Tehri exports timber, forest produce, ghee, rice and potatoes, while it imports piece-goods, sugar, salt, iron and brass vessels, pulses, spices and oil. Imports, chiefly of food-stuffs, was worth Rs. 11,87,543, of which Rs. 9,35,863 worth was disposed of. The trade with Tibet is established and a new market at Pooling has been opened. A little borax passes through the state from Tibet, and salt is imported from the same country for local consumption. Merchandise is carried entirely on pack animals or by coolies. Mussoorie is the chief mart supplying the State.

Trout hatchery.—Trout hatchery is maintained by the State and (in 1920-21) 3 lakhs ova were obtained and planted into the Assi and Hanumanganga streams.

There are no manufactures except small industries in blanket weaving and tanning. There are a few Bhotias in the north of the State who trade with Tibet. Their women are employed in the weaving industry. The products are of the same quality as of Garhwal. Bagori near Harschil (Harshila) is a big centre for the northern trade, and especially for the manufacture of Gudmas, Thulmas and Barmals.

Agricultural stock.

Bulls	...	...	...	58,065
Cows	...	...	...	81,385
Buffaloes	...	...	...	1,358
Cow-buffaloes	...	...	...	24,318
Horses	...	...	...	390
Mares	...	...	...	180
Colts	...	...	...	5,774
Asses	...	...	...	202
Sheep and goats	...	...	...	86,703

Industrial possibilities.—Tehri State can do a great deal in the advancement of industrial development. A beginning has been made with the trout hatchery and fruit gardening. But much more is still to be done for the benefit of its people. Besides agricultural development, the following are the industries that could be worked up easily:—

- (1) Match factory—Spruce and silver fir are available to a very large extent in the State forest and a

match factory on cottage lines can flourish very well.

- (2) A school for wool weaving and another for carpentry.
- (3) Seri-culture (silk)—mulberry plantations have been already put up by the State.
- (4) Api-culture (bee keeping) for honey and wax.
- (5) Cattle and sheep-breeding.
- (6) Dairy farming and poultry keeping.
- (7) Lac-culture.
- (8) Medicinal plants.

All of these, if started, will add to the present income of the State and will afford the State people sufficient occupation.

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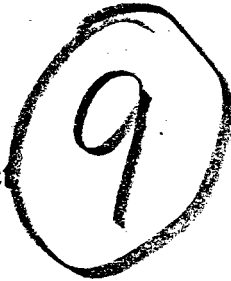
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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Ghazipur District

By

B. R. BHATTA, L.M.E.



ALLAHABAD:

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	<i>Page.</i>
FOREWORD	i—ii
CHAPTER I—General features of the district—	
(a) Boundaries and area	1
(b) Topography	<i>ib.</i>
(c) Population	<i>ib.</i>
(d) Forest area	<i>ib.</i>
(e) Railways	<i>ib.</i>
(f) Steamer Service	2
(g) List of Ferries	<i>ib.</i>
(h) List of Roads	<i>ib.</i>
(i) List of Markets	3
(j) List of Fairs	5
CHAPTER II—	
1. Art industries—	
(a) Ornamenting of bangles	7
(b) Zardozi work	<i>ib.</i>
(c) Manufacture of gold and silver ornaments	8
(d) Manufacture of clay toys	9
2. Building materials—	
(a) Wood and timber	<i>ib.</i>
(b) Building stone	10
- (c) Brick making—	
(i) Bull's trench kilns	11
(ii) B. & N.-W. Railway Brickfield at Dhondha Dih.	12
(iii) Bangla bhatthas	<i>ib.</i>
(d) Lime kilns	13
3. Chemicals—	
(a) Manufacture of sajji	<i>ib.</i>
(b) Manufacture of saltpetre—	
(i) Crude saltpetre	15
(ii) Refined saltpere—	
(1) Refining of crude saltpetre	<i>ib.</i>
(2) Kuthia saltpetre	16
(c) Manufacture of soap	<i>ib.</i>

	<i>Page.</i>
4. Food grains—	
(1) Area, production and prices of the chief crops	17
(2) Flour milling industry	18
5. Hardware—	
(a) Cutlery work	19
(b) Tin-smithy	<i>ib.</i>
6. Leather—	
(i) Raw materials	20
(ii) Tanning	21
(iii) Manufacture of shoes—	
(a) Indian pattern	<i>ib.</i>
(b) English pattern	<i>ib.</i>
(iv) Manufacture of harness	22
(v) Manufacture of kuppis	23
7. Miscellaneous—	
(a) Manufacture of fireworks	24
(b) Manufacture of cocoanut huqqas	<i>ib.</i>
(c) Manufacture of smoking tobacco	25
(d) Jail industries	<i>ib.</i>
(e) The Opium Factory	27
8. Oil industry	31
9. Other industries connected with edibles—	
(a) Manufacture of sweetmeats	32
(b) Manufacture of khowa (dehydrated milk)	<i>ib.</i>
(c) Manufacture of ice-creams	33
10. Perfumery	34
11. Pottery and glass—	
(1) Manufacture of crude glass jars (karabas)	36
(2) Manufacture of crude glass churis	37
12. Textiles—	
(i) Cotton spinning and weaving	<i>ib.</i>
(ii) Dyeing and printing	40
(iii) Sheep rearing and blanket weaving	<i>ib.</i>
13. Wood industry	42
CHAPTER III—	
Suggestions for the improvements of the various district industries.	43
CHAPTER IV—Statistics—	
1. Ornamenting of bangles	44
2. Zardozi work	45
3. Building stone and articles made of stone	<i>ib.</i>

	<i>Page.</i>
4. Sajji making	46
5. Saltpetre refining	<i>ib.</i>
6. Soap manufacture	47
7. Flour milling industry	48
8. Cutlery works of Zamania	<i>ib.</i>
9. Manufacture of shoes of Indian pattern	49
10. Manufacture of shoes of English pattern	50
11. Manufacture of smoking tobacco	<i>ib.</i>
12. Manufacture of cocoanut huqqas	51
13. Perfumery	52
14. Manufacture of crude glass jars (karabas)	53
15. Textiles—	
(i) Angocha weaving	<i>ib.</i>
(ii) Handloom weaving at Bahadurganj	54
(iii) Blanket weaving	<i>ib.</i>
CHAPTER V.—Directory—	
1. Dealers in gold and silver, and ornaments made thereof.	56
2. List of gold and silversmiths	<i>ib.</i>
3. Manufacturers of clay toys	57
4. List of zardozi workers	<i>ib.</i>
5. List of timber merchants	<i>ib.</i>
6. List of stone merchants	<i>ib.</i>
7. Owners of brick kilns—	
(i) Bull's trench type	58
(ii) Bangla bhatthas	<i>ib.</i>
(iii) Country pazawas	<i>ib.</i>
(iv) Owner of B. & N.-W. Railway Brickfield at Dhondha Dih.	<i>ib.</i>
8. Owners of lime kilns	<i>ib.</i>
9. Soap manufacturers	<i>ib.</i>
10. List of dealers in sajji	59
11. List of saltpetre refiners	<i>ib.</i>
12. Owners of flour mills	<i>ib.</i>
13. Manufacturers of cutlery	<i>ib.</i>
14. List of tin-smiths	<i>ib.</i>
15. Dealers in, and exporters of, hides and skins	60
16. Leather tanners and manufacturers of shoes of Indian pattern.	<i>ib.</i>
17. Manufacturers of shoes of English pattern	61
18. List of harness manufacturers	<i>ib.</i>

	<i>Page.</i>
19. List of kuppi makers	61
20. Manufacturers of fireworks	<i>ib.</i>
21. Manufacturers of cocoanut huqqas	<i>ib.</i>
22. Manufacturers of smoking tobacco	62
23. Owner of the Newatia Oil and Flour Mills and Iron Workshops.	<i>ib.</i>
24. List of chief telis	<i>ib.</i>
25. Manufacturers of sweetmeats	63
26. Manufacturers of khowa and dealers in milk and khowa.	64
27. Manufacturers of ice-creams	65
28. Manufacturers of scented oils, etc.	<i>ib.</i>
29. Manufacturers of crude glass jars (karabas)	66
30. Manufacturers of crude glass bangles	<i>ib.</i>
31. List of yarn dealers	<i>ib.</i>
32. List of dealers in, and exporters of, angochas	<i>ib.</i>
33. List of handloom weavers	<i>ib.</i>
34. List of dyers and chhipis	70
35. Ornameters of bangles	<i>ib.</i>
CHAPTER VI—	
1. Tariff schedule for chief articles of import	71
2. Railway rates	<i>ib.</i>
Bibliography	73

FOREWORD.

THE district of Ghazipur is known for its rose itr and scented oils. But the industry is said to be declining, partly owing to the rise in prices of the necessities of life when fewer people think of going in for luxuries, and partly due to the decrease in the area under rose. Then there is the keen competition with foreign synthetic perfumes and Indian perfumes are steadily giving way to synthetic products. Experiments were undertaken in the laboratory of the Industrial Chemist and it appears that the requirements of the industry are :—

- (i) the selection and systematic cultivation of a variety of rose with a higher otto content and a better yield of flowers, and
- (ii) an improved still whereby a better yield of otto could be secured from the flowers.

These experiments have to be further pursued and as the perfumers have neither the capacity nor the scientific training to carry them out, further investigation should proceed in Government laboratories and the results of the experiments made public and known even to the vernacular readers.

After perfumery comes, in importance, the weaving of cotton goods. There is nothing special there. The industry lacks organization here as in other districts of the province, and co-operative societies are recommended to cheapen the cloth and also the starting of small factories by inducing the weavers to accept piece wages.

Other industries are not carried on on any large scale. Bangles of crude glass are made by a few manihars and are ornamented with Salma and Sitara. The industry is declining in competition with the glass ornamentation which is more lasting.

About 25,000 maunds of sajjī worth one and a half lakh rupees is made and exported to Calcutta. The industry finds employment to over 3,500 souls in 288 works. But the method is in need of improvement. The possibilities of manufacture of pure carbonate of soda and caustic soda from reh or sajjī should be investigated thoroughly and the results brought home to the manufacturers. A start has been made in the late

soda factory during the last war. The investigation was further pursued this year in the Technological Institute, but perhaps a further continuation of the investigation is necessary. In the meantime it may be worth while to publish the results of the researches made so far in such a manner that the information will be readily available to the actual manufacturers.

Among the local industries may be mentioned the Zardozi work, the manufacture of gold and silver ornaments and clay toys, dressing of stone, the manufacture of bricks, lime, soap, the grinding of wheat by power, pottery, the manufacture of coconut huppas, kuppis, harness and shoes.

But the manufacture of knives and nut-crackers and saltpetre deserves more than a passing mention as the products are made for export also.

Some 7,000 maunds of crude saltpetre is refined and sent to Calcutta. This can be improved or, after establishing direct connection with some of the exporters, turned into manure locally and exported.

Similarly can the manufacture of knives and nut-crackers be organized with the aid of a capitalist or on co-operative basis. Better advertisement will extend sales and subsequently the quality will also improve.

The report has been drawn up on lines similar to those of the previously published reports.

The report has been revised by Mr. S. T. Gadre, Industrial Chemist to Government, United Provinces, and improved by his suggestions. My thanks are due to him for the trouble he has taken. I have also to acknowledge the help rendered by the following gentlemen :—

1. C. M. Collett, Esq., I.C.S., Collector and Magistrate, Ghazipur.
2. P. M. Kharegat, Esq., I.C.S., Collector and Magistrate, Ghazipur.
3. C. E. Wild, Esq., I.C.S., Opium Agent of Benares.
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5. J. L. Sinha, Esq., Honorary Manager, District Co-operative Bank, Ghazipur.
6. B. K. Ghare, Esq., of the Cawnpore Agricultural College.

CHAMPA RAM MISRA.

31st July, 1923.

CHAPTER I.

INTRODUCTORY.

General features of the district,

(a) Boundaries and area.

It is bounded on the north-west by the Azamgarh district, on the north-east and east by the Ballia district and on the south-east by the Shahabad district of Bihar. Its area is 1,392 sq. miles.

(b) Topography.

In its general aspects the district may be described as a level plain, with slight undulations caused by the valleys of the rivers.

(c) Population.

Census of 1911: population 839,725; density about 603 persons to the sq. mile.

(d) Forest area.

There are no forests in the district, and the area under jungle is very small, save in the parganas of Shadiabad, Bahariabad and Pachotar, where considerable stretches of dhak and babul jungles are to be seen.

(e) Railways.

Railway.	Section.	Distance.	Stations.
E. I. R.	Main Line	23 miles	Gahmar, Bhadaura, Dildarnagar and Zamania.
Do.	Tarighat branch	12 miles	Dildarnagar, Nagsar and Tarighat.
B. & N.-W.	Chupra-Benares	57 miles	Aunrihar, Saiyedpur-Bhitri, Taraon, Nandganj, Ankuspur, Ghazipur City, Ghazipur Ghat, Shahbazkuli, Yusufpur, Dhondha Dih, K a r i m uddinpur and Tajpur Dehna.

Railway.	Section.	Distance.	Station.
B. & N.-W. Ry.	Bhatni-Benares	27 miles.	Aunrihar, Mahpur, Sadat, Jakhania and Dulahpur.

Do. Aunrihar-Jaunpur Section passes through the district for a distance of about 7 miles.

(f) *Steamer Service.*

There is a Steamer Ferry Service belonging to the B. & N.-W. Railway Company between Tarighat and Ghazipur.

(g) *List of Ferries.*

River.	Ferries.
Ganges	... Saiyedpur, Bhulwaria, Chakeri, Narauli, Chochakpur, Guraini, Sisaunda, Dharampur, Tajpur Manjha, Matsa, Jeopur, Deoria, Pathal or Wazirabad, Nawapura, Ghazipur, Kalupur, Patkania, Narayanpur or Hariharpur, Sadhopur or Rampur, Nekdilpur, Gahmar and Birpur.
Karamnasa	... Tajpur, Kurra, Khajuri, Amaura, Dewal, Lahna, Sair, Bhataura, Bara, Saraila, Karmahri and Deorhi.
Mahuji Nala	Mahuji.
Gumti	... Gurhat and Gauri.
Gangi	... Paharpur, Pachara, Bilasi, Sabna and Parmit Ghat.
Sarju	... Sidhagar Ghat.
Mangai	... Chauja, Nasratpur, Chhapri and Bazidpur.
Besu	... Hathia Ram, Molnapur, Shadiabad, Singh-nathpur, Andila, Yusufpur, Kataila, Baghol, Mehar Alipur, Rasulpur, Kandhwara, Chaonrahi and Dungarpur.

(h) *List of important Roads.*

Metalled roads—

	Miles.
1. Ghazipur-Dohri Ghat and Gorakhpur Road ...	20
2. Ghazipur-Azamgarh Road ...	12
3. Ghazipur-Saiyedpur and Benares Road ...	28
4. Ghazipur-Korantadih and Ballia Road ...	24
5. Ghazipur to Grand Trunk Road via Zamania Railway Station ...	13
6. Ghazipur-Lathudih and Ballia Road ...	17

	Miles.
<i>Unmetalled roads—</i>	
1. Ghazipur-Zamania and Sasseram Road ...	10
2. Faridchak-Qasimabad and Rasra Road ...	17
3. Saiyedpur-Sadat Road ...	11
4. Saiyedpur-Bahriabad Road ...	13
5. Kotwa-Lathudih and Rasra Road ...	16
6. Ghazipur-Firozpur and Jalalabad Road ...	20
7. Ghazipur-Chochakpur and Benares Road ...	18
8. Tarighat-Gahmar Road ...	15
9. Bahriabad-Chiriakot Road ...	4
10. Bahriabad-Birnon and Kaghzipur Road ...	27
11. Jalalabad-Mardah and Qasimabad Road ...	17
12. Muhammadabad-Qasimabad and Bahadurganj Road	21
13. Saiyedpur-Bhitri and Shadiabad Road ...	14
14. Saiyedpur-Chochakpur, Zamania and Buxar Road	45
15. Baresar-Dhanapur and Benares Boundary Road	18
16. Mahnji-Kamalpur and Sakaldiha Road ...	14
17. Bhimapur-Rajwarighat Road ...	10
18. Parsa-Ahmat and Rasra Road ...	10

(i) *List of Markets.*

Tahsil.	Locality.	Market days.
Ghazipur	... Nandganj ...	Friday.
	Jalalabad ...	Do.
	Mustafabad ...	Thursday.
	Sikri ...	Monday.
	Birnon ...	Tuesday and Friday.
	Mardah ...	Monday and Thursday.
	Bogna ...	Wednesday.
	Nakhatpur ...	Do.
Muhammadabad	... Ahmat ...	Monday.
	Qasimabad ...	Sunday and Wednesday.
	Bahadurganj	Wednesday and Saturday.

INDUSTRIAL SURVEY.

Tahsil.	Locality.	Market days.
	Baresar	... Sunday and Thursday.
	Shahbazzpur	... Sunday.
	Mata	... Tuesday.
	Sagapali	... Wednesday.
	Nawada	... Do.
	Kamupur	... Do.
	Fateh Sarai	... Thursday.
	Zahurabad	... Friday.
	Banka	... Do.
	Dubhia	... Saturday.
	Barachaur	... Do.
	Ghausalpur	... Thursday and Sunday.
	Muhammadabad	Tuesday and Saturday.
	Yusufpur	... Do.
	Kuresar	... Monday and Thursday.
	Birpur	... Do.
	Ghauspur	... Sunday and Wednesday.
	Gangauli	... Do.
	Mirzabad	... Do.
	Bishunpura	... Do.
	Kamalpur Lodi	Sunday and Thursday.
	Karimuddinpur	... Do.
	Authai	... Sunday and Friday.
	Gharjori	... Tuesday and Friday.
	Gandpah	... Monday.
	Mahend	... Sunday.
	Sonari	... Tuesday.
	Gondaur	... Wednesday.
	Khardiha	... Saturday.
	Rasulpur	... Do.
	Habibullah.	
	Tajpur	... Tuesday.
	Utraon	... Monday.
	Bibipur	... Friday.
	Ghosalpur	... Sunday and Thursday.
Zamania	... Zamania	... Tuesday and Saturday.
	Bara	... Do.
	Nauli	... Tuesday and Friday.
	Reotipur	... Sunday and Wednesday.
	Betabar	... Wednesday.
	Sadhapur	... Thursday.

GHAZIPUR DISTRICT.

5

Tahsil.	Locality.	Market days.
Saiyedpur	Nek Dih.	Thursday.
	Bahariabad	Wednesday.
	Bhimapar	Friday.
	Karanda	Sunday, Wednesday and Thursday.
	Barsara	Wednesday.

(j) List of Fairs.

Tahsil.	Locality.	Name of Fair.	Date.
Ghazipur	Ghazipur	Ramlila	Kuar Sudi 2nd to 10th.
	Ghazipur	Ghazi Mian	First Sun- day in Jeth.
	Khalispur	Tirmohani	Bhadon Sudi
	Sulemanpur	Sheoratri	Phagun 12th, Badi 13th.
	Kanwan	Dadri	Kartik Pur- namashi.
Muhammad- abad.	Zahurabad	Sheoratri	Phagun Badi 13th and B a i s akh Badi 13th.
	Karimuddinpur	Ramnaumi	Chait Sudi 9th.
	Hanuman Chauki.	Tirmohani	Bhadon Sudi 12th.
	Zamania	Sherpur	Ramlila	Kuar Sudi 2nd to 10th.
Reotipur		Do.	Do.
Gahmar		Ramnaumi	Chait Sudi 9th.
Sohwal		Dhanusjag	Aghan Badi 13th.

Tahsil.	Locality.	Name of Fair.	Date.
Saiyedpur	... Saiyedpur	... Sheikh Saman Shah.	Wednes day and Thurs- day after Chait Sudi 5th.
	Chochakpur	... Dadri	... Kartik Pur- nimeshi

CHAPTER II.

DESCRIPTION OF THE VARIOUS DISTRICT INDUSTRIES.

1. Art industries.

(a) *Ornamenting of bangles.*—About 20 families of Churiharas are engaged in the town of Ghazipur in the industry of ornamenting bangles of crude glass. The bangles are manufactured in the villages of Nonahra, Paharipur, Subkharapur, Sohwal, etc., and are purchased by the Churiharas at about 1,200 for a rupee. The ornamentation is done with salma, sitara, gokhru, etc., mostly imitation, and obtained from Benares at 3 annas to 4 annas per tola. It takes 1 to 2 days for a set of 32 churis to be ornamented in this way and its price is 8 annas to Rs. 2 per set according to the workmanship. Churis are also ornamented with real salma, sitara and gokhru, but only when orders are received for them. Real salma, sitara and gokhru sell at Rs. 1-12 to Rs. 2-2 per tola and the price of a set of these churis ranges from Rs. 2 to Rs. 10, while it takes 2 to 5 days to ornament a set. Churis are sold in retail at a few shops in the town and are also bought at wholesale rate by petty merchants for retail sale at the neighbouring fairs.

Churis are also exported to places like Ballia, Muzaffarpur, etc., from where merchants come to buy them personally. The industry was at one time in a very flourishing condition, but has much declined during recent years partly owing to a change in the tastes of the people and partly to a general rise in the prices. The average earning of a Churihara is about 12 annas a day, but nowadays they do not get employment throughout the year in this industry and have to follow some other profession along with it.

(b) *Zardozi work.*—About three families of Muhammadans are engaged in the town of Ghazipur in the industry of ornamenting caps. These are of three kinds: ornamented (i) with silk, (ii) with silk and kalabatun, and (iii) with salma, sitara, gokhru, etc. The caps are made of coloured velvet, satin or

cotton flannel. For ornamenting a cap about a tola of salma, sitara and gokhru worth about 4 annas is required. A cap takes 1 to $1\frac{1}{2}$ days for ornamenting. The price of a yard of velvet is Rs. 3-8, and a yard of it makes about 5 caps. For one cap about 9 annas worth of silk is required. Lining costs one anna 6 pies, oilcloth one anna 6 pies and cardboard 6 pies. The price of a cap ornamented with only silk is Rs. 3, and that with kalabatun also is Rs. 4. Some of the manufacturers have employed one or two men at their shops for the work and they are paid by piece-work at 6 annas to 10 annas per cap. The average earning of a man is about 8 annas a day. The manufacturers state that there is not much demand for these caps now and they do not find work throughout the year, consequently they have to do some other work in addition to this, such as the manufacture of plain caps, etc. It is only during the marriage season that they are busy.

(c) *Manufacture of gold and silver ornaments.*—Gold and silver-smiths ply their trade in almost all large towns and villages. Some of the town smiths have earned a deal in the trade, and in addition to this work they do some money-lending as well. There is still a large demand for ornaments in the houses of rich and middle class people, specially at the time of marriages. Investment in ornaments is considered to be a second form of investment. The present price of silver is about Rs. 86 per 100 tolas, and that of gold is about Rs. 25-8 per tola. The goldsmiths generally charge Re. 1 to Rs. 2 per tola for making gold ornaments and 2 annas to 4 annas per tola for silver ornaments. There are special rates for high class workmanship. The earning of a goldsmith ranges from Rs. 1-8 to Rs. 2 a day, but sometimes it is much more than this.

The following are some of the chief ornaments of gold :—

Hansuli, bali, bala, jhumka, anguthi, karanphul, anant, jawa, tika, bendi, baju, kara, barekhi, etc.

The following are some of the chief ornaments of silver :—

Kara, baju, barekhi, panwan, kakni, chagni, pichlia, arsi, anguthi, chhalla, pajeb, palani, lachha, auntha, kardhani, hansuli, etc.

Many of the ornaments are made of both gold and silver; the richer class people use gold and the poorer people content themselves with those of silver or even those of white metal.

(d) *Manufacture of clay-toys.*—About half a dozen Kumhars in the town are engaged in the manufacture of miniature models of animals and Hindu deities of clay. Clay is obtained from several tanks near the town, such as the Shah Alam tank in Mohalla Barbarahna or the tank at Khidrabad about 2 miles from the town. Nothing has to be paid for it to the zamindar by way of royalty, but sometimes a certain number of articles are presented free of charge in return. The toys are all for local use and are coloured with a paste made of gum and aniline dyes. The average earning of a Kumhar is about 12 annas a day, but they have a busy day during the fairs. Besides the manufacture of clay toys, their services are also required during the marriage season for painting figures on walls, etc.

2. Building materials.

(a) *Wood and timber.*

There are about half a dozen shops in the town for the sale of wood and timber. Sakhu beams and sakhu and asna ballis are generally kept for sale and are generally imported from Gorakhpur, Maskanwa and Tisrasia.

The following are some of the present prices:—

	Rs.	a.	
Sakhu beams 4' to 5' × 6" × 4" ...	2	8	per c. ft.
„ „ 6' to 7' × 6" × 4" ...	2	12	„ „ „
„ „ 8' to 9' × 7" × 5" ...	3	0	„ „ „
„ „ 10' to 11' × 8" × 6" ...	3	2	„ „ „
„ „ 12' to 13' × 8" × 6" ...	3	4	„ „ „

	Rs.	
Sakhu ballis 30' × 6" diam ...	5	each.
„ „ 30' × 8" „ ...	7	„
„ „ 30' × 10" „ ...	12	„
Asna ballis 30' × 6" „ ...	4	„
„ „ 30' × 9" „ ...	6	„
„ „ 30' × 10" „ ...	11	„

Bamboos are imported from Bengal and the neighbouring villages of Ghazipur on the banks of the Ganges. Two hundred bamboos are tied together to form one bera which is floated in the river. The charge for making one bera is Rs. 2 and the charge for bringing a bera up to Ghazipur is about Rs. 8. The

prices of bamboos at the places of origin are Rs. 50 to Rs. 65 per 100 and they are sold here at Rs. 100 to Rs. 125 per 100.

Chhar (a kind of thin bamboo) is imported here from Dehrihat. It is brought in beras from Dehrihat to Buxar and from there by boats. Beras generally flow down with the current and it is not possible to row big beras up the stream; this is the cause of changing the means of transport at Buxar. A bera consists of 12,000 chhars and the charge for making a bera is Rs. 2. The charge for bringing a bera of chhars from Dehrihat to Buxar is Rs. 10. The Canal department charges 8 annas per thousand and the boat charges for bringing chhar from Buxar to Ghazipur are about Rs. 1-8 per thousand. Chhars are purchased at Rs. 27 per thousand and sold here at about Rs. 40 per thousand.

(b) *Building stone.*

There are three shops in the town for the sale of building stone. Stone is imported from Dagmaipur, Sihora and Chunar by boats. The charges for bringing stone from Chunar to Ghazipur by boat are about Rs. 150 per thousand maunds. The municipal duty on stone is 6 pies per maund.

The following are some of the present prices of undressed stone at Ghazipur:—

	Rs.
3' × 12" × 1½"	... 50 per 100 pieces.
3' × 18" × 1½"	... 68 " " "
4' × 12" × 1½"	... 68 " " "
4' × 18" × 1½"	... 125 " " "
5' × 12" × 1½"	... 125 " " "
5' × 22" × 2½"	... 2-13 each.
4' × 22" × 2½"	... 2-4 "
6' × 22" × 2½"	... 3-6 "
4' × 12" × 2½"	... 1-4 "

Besides undressed stone, various articles of stone are manufactured and kept ready for sale. The articles generally made are dasas, thallas and ghorias. A man can make 6 dasas in a day for which wages are paid by piece at the rate of one anna 3 pies each. A man can make 2, 3 or 4 thallas in a day according to the size (large, medium or small) for which wages are paid at 5 annas, 3 annas 9 pies and 3 annas each. A man can make 4 ghorias in a day, the wages for which are paid at 3

annas each. During the rainy season, when there is not much demand for building materials, other articles of household requirements are made and kept ready for sale, such as grinding mill (janta), chaki, sil and lorha, onkhali, chowki, etc. A man can make 2 pairs of janta, 3 pairs of chaki, 10 onkhalis or 4 sils and lorhas in a day, and wages for these also are paid by piece at the rate of 4 annas 6 pies per pair of janta, 3 annas per pair of chaki, 2 annas 6 pies per onkhali, and 3 annas for a sil and lorha. The average earning of a man is 10 annas to 12 annas a day. When stone dressers are employed for dressing building stones they are paid by daily wages, which also comes to about the same amount.

The following are some of the present prices of the various articles made of stone :—

Thallas (large, medium and small).	...	Re. 1, 12 annas and 8 annas each.
Ghórias	...	12 annas each.
Jantas	...	Rs. 1-8 ,,
Chakis	...	Re. 1 ,,
Sils and lorhas	...	Re. 1 ,,
Onkhlis	...	8 annas ,,
Chowkis	...	12 ,, ,,

(c) *Brick making.*

Bricks are made by the new process known as Bull's trench kiln system as well as by the older type of kilns known as Bangla bhatthas. The old pazawa system is still in vogue where cheap bricks are in demand.

(i) *Bull's trench kilns.*—There are at present two kilns of this class and one of them is situated at about 4 miles from the town. The royalty paid for the land is about Rs. 72 per annum. About 70 men are working at present. Skilled men are paid Rs. 20 to Rs. 25 and unskilled men Rs. 10 to Rs. 12 per month. Pathai is paid at the rate of Rs 1-12 per thousand. The charge for a pur (bucket) is Rs. 2 per day. Sand is obtained from the bank of the Ganges about 1½ miles away and its cartage is paid at Rs. 2 per trip. The land from where sand is taken also belongs to the owner of the brickfield. About 1½ lakh of bricks are put in at a time, and when baking starts, about 8,000 bricks are taken out and replaced by the same number of sun-dried bricks every day. Out of those

removed from the kiln, about 4,000 are of 1st class, 2,000 of 2nd class and 2,000 of 3rd class. About 32 tons of coal is required for burning a lakh of bricks, and its present price is about Rs. 20 per ton. The owner complains of its irregular and uncertain supply.

The number of bricks taken out every day and its proportion in the different classes is always variable and depends upon the skill of the workmen and the supply of labour for which there is a good deal of difficulty, specially during the time of harvest.

The following are some of the present prices:—

	Rs.
1st class bricks	20 per thousand.
2nd class bricks	16 „ „
3rd class bricks	12 „ „

(ii) *The B. & N.-W. Railway brickfield.*—The kiln is situated near the Dhondha Dih railway station and is worked by a contractor. It is of the Bull's trench type and has a capacity of 3½ lakh bricks. It has been started from January last with the object of supplying bricks to the Benares circle. The land belongs to the railway. About 8,000 bricks are taken out and replaced by the same number of sun-dried bricks every day. Out of these 4,000 are of 1st class, 2,000 of 2nd class, 1,000 of 3rd class hard and 1,000 of 3rd class inferior. About 60 men are working at present. Pathai is paid at Rs. 2 per thousand. Water is supplied by dhekul (lever arrangement for lifting water) for which 2 men are paid at 6 annas each per day. Sand is supplied free of charge by the railway and is brought from Chandiarā. Coal is also supplied by the railway at a reduced rate of Rs. 9 per ton.

The following prices are paid by the railway for the bricks:—

	Rs.
1st class	12 per thousand.
2nd class	10 „ „
3rd class	8 „ „

Arrangements are also being made for grinding surkhi and for burning lime here.

(iii) *Bangla bhatthas.*—There are about ten of these near the town. Their capacity varies from 40,000 to 2 lakh bricks. Bricks of the size 8" × 3½" × 1½" are generally manufactured.

The royalty for the land is paid at Rs. 30 to the zamindar. For one bhattha there are 3 to 10 brick-makers who are paid by piece at Re. 1-2 per thousand bricks, and a man can make about 500 bricks in a day. Water is obtained from the neighbouring ponds, but when these dry up it is drawn from the wells for which a man is paid 9 annas per day. For burning 1,000 bricks firewood and cowdung cakes worth Rs. 4 are required. About 25 per cent. 1st class, 25 per cent. 2nd class and 25 per cent. 3rd class bricks are obtained and about 25 per cent. remain unbaked and have to be reburnt. The municipal duty on bricks is one anna per ass-load.

The following are some of the present prices of these bricks :—

	Rs.
1st class	12 per thousand.
2nd class	8 „ „
3rd class	6 „ „

(d) *Lime kilns.*

The kilns are of the ordinary country type in which cowdung cakes are generally used as fuel. Kankar for burning lime is obtained from the neighbourhood of the villages of Hasai, Lakhimpur, Faridchak, Rahimpur, etc. The royalty paid for it to the zamindar is one anna per cart-load; digging charges are about Rs. 2-8 per 100 c. ft. and its cartage is about 8 annas per mile. In one charge of the kiln about 100 c. ft. of kankar is burnt for which about one cart-load of cowdung cakes worth about Rs. 8 is required and it yields about 50 maunds of lime. Kankar is sometimes also picked up from the river bank at Mardapur from where its cartage to Ghazipur is about Rs. 5 per cart-load. Sometimes people dig out kankar on their own account and sell it to the lime kiln owners at about Rs. 1-8 per cart-load. Kilns are fired only once a week. The present price of lime is about Rs. 60 per 100 maunds. Generally 4 men work on one kiln, two of whom are paid at 9 annas and two at 4 annas per day. The municipal duty on kankar is 7 annas per cart-load.

3. Chemicals.

(a) *Manufacture of saji.*

The manufacture of saji is carried on in about 150 villages mostly in the Saïyedpur and Ghazipur tahsils by a special caste

of people known as Lonias. Sajji is extracted from the saline efflorescence or reh obtained in the usar tracts. The usar lands near Shajdiabad in the Ghazipur tahsil is said to produce the best sajji.

Sajji is of three qualities. 1st class or tarari, 2nd class or thonsa, and 3rd class or mowna.

The following acreage has been returned under reh in the different tahsils :—

Tahsil.				Acres under reh.
Ghazipur	...	...	...	2,479
Zamania	...	...	...	1,390
Saiyedpur	...	...	...	4,555
Muhammādābād	...	...	...	625

The number of bhatthis for the manufacture of sajji in the district has been returned at 288 and about 3,583 persons are engaged in this industry.

Reh is collected from the usar land and spread in one place; water is then sprinkled over it profusely. It is next allowed to dry. By the heat of the sun the saline earth comes at the top and dries in the form of layers called papri. Pans for manufacturing sajji are made of clay and sugarcane leaves are used for stiffening them. Firewood and cowdung cakes are used as fuel.

Papri mixed with water is poured on the hot pan. Wooden scrapers (pharuhas) are used to scrape the saline portion which solidifies on the pan and the ordinary earth is scraped away. About 50 maunds of papri yielding about 15 maunds of sajji is treated on one pan in one night. This work is generally done in the nights. About Rs. 10 worth of fuel is required for one charge of the furnace. Six men work on each furnace and one such operation requires about a week or 10 days. Every time a fresh bhatthi has to be erected. One furnace can treat the reh of about 50 bighas of usar in about 3 months or one season. Sajji is manufactured only during the months of April, May and June as a hot sun is essential for forming papri. The land belongs to the zamindars who lease it out at about Re. 1 per bigha. There are about a dozen dealers who take the lease of the land, supply fuel, etc., to the Lonias and purchase the manufactured sajji from them. They purchase sajji at Rs. 3 to Rs. 5 per maund and sell it at Rs. 4 to Rs. 7 per maund.

The dealers here sell nearly the whole of the saji to the dealers of Rasra, most of whom have their own shops in Calcutta. Saji is exported to Calcutta both by rail as well as by boats. The railway charges are Re. 0-7-2 per maund or Rs. 121-13-4 per wagon of 10 tons, and the boat charges are about Rs. 50 per 100 maunds from Saiyedpur to Calcutta. The industry is in a flourishing condition and the dealers have earned a deal in the trade, but the condition of the Lonias is very deplorable as their earning is much less and they are always under the thumb of the dealers. It is estimated that about 25,000 maunds of saji is manufactured in the district annually.

(b) *Manufacture of saltpetre.*

Saltpetre is manufactured from the nitrous earth obtained near old habitations. The work is carried on throughout the district by a special caste of people known as Lonias.

(i) *Crude saltpetre.*—Water is allowed to percolate through the nitrous earth. The liquor is then boiled in iron pans. Dry leaves are used as fuel. Common salt invariably separates during boiling and has to be fished out. The concentrated liquor of saltpetre thus ultimately retains a comparatively small quantity of common salt. The process of concentration usually takes about 15 hours till the point of saturation is reached. On cooling a mixture of common salt and saltpetre crystallises. In one charge of the pan about 3 seers of saltpetre is obtained. This is the crude saltpetre of commerce and is the commodity purchased by saltpetre refineries in these provinces. Its present price is Rs. 4 to Rs. 5 per maund of 100 lbs. according to its quality. A portion of it is also sold to goldsmiths who use it for cleaning ornaments. The total number of crude saltpetre works in the district has been 290 according to the latest returns.

(ii) *Refined saltpetre.*—There are four refineries in the district, viz., at Gahmar, Bara, Pachokhar and at Shahipura in Ghazipur City. The one at Pachokhar has been working for the last 25 years. Crude saltpetre manufactured by the Lonias is obtained from the neighbouring villages of the district as well as from the neighbouring districts of Bihar.

(1) *Refining of crude saltpetre.*—About 7 maunds of saltpetre is refined in a pan at a time. The liquor is concentrated

by boiling for about 2 hours after which it is transferred to earthen vats, where on standing for 3 to 4 days the pure saltpetre crystallises out. In this manner from 7 maunds of the crude stuff 3 to $3\frac{1}{2}$ maunds of refined saltpetre are obtained. It is possible to take three such charges of the pan in a day for which about 3 maunds of firewood is required. In some of the refineries dry leaves are used for this work as well. About 5 baskets of dry leaves at 2 annas per basket are required daily. Three men work on a furnace and they are paid at 8 annas per day. The same people bring dry leaves during their leisure hours and can earn about 4 annas extra. All the refined saltpetre manufactured as above is exported to Calcutta and sold there through brokers who charge about 2 per cent. as their commission. The present price of this saltpetre in Calcutta is said to be Rs. 10-8 per maund. The total quantity of refined saltpetre manufactured in the district during the year 1922-23 was calculated to be 3,512 maunds.

(2) *Kuthia saltpetre*.—The earth and also other impurities (known as *sitha*) which separate during the process of refining the nitrous earth are stored away in one place where the nitrification process continues. The saltpetre obtained from this earth is known as *Kuthia saltpetre*. The difference between *Kuthia saltpetre* and the crude saltpetre is that the former is purer and is not further refined. It is not so pure as the refined saltpetre, its crystals are smaller than those of the refined saltpetre, and for these reasons only it sells at a cheaper rate. The process of its manufacture is the same as that for the crude saltpetre. About 15 seers of saltpetre are obtained from one charge of the pan. Wages for this work are paid in kind so that the men receive half of the saltpetre produced which, however, is sold back to the factory owner at Rs. 5 per maund. The crude saltpetre thus produced sells at Rs. 7 per maund at present. Common salt obtained during the process is destroyed as it does not pay to extract it after payment of the duty. The total quantity of *Kuthia saltpetre* manufactured during the year 1922-23 was returned at 1,386 maunds.

(c) *Manufacture of soap.*

Two families of Muhammadans in the town are engaged in the manufacture of crude soap used by dhobis. Castor oil and tallow are both mixed together in equal proportions. Both

are purchased locally. Castor oil at Rs. 25 per maund and tallow at Rs. 26-8 per maund. Castor oil, tallow, saji and lime are the chief ingredients used in the manufacture. About 10 maunds of soap are manufactured in each factory in a month. No outside men are employed in the work; the members of the family do the whole work themselves.

The following are said to be the proportions and prices of the various ingredients used :—

		Rs.	a.	p.
1 maund saji	3	0 0
10 seers lime	0	10 0
10 seers castor oil and tallow	6	8 0
1 maund firewood	1	0 0
			<hr/>	
Total	11	2 0

This soap will be in weight about one maund and it sells at Rs. 16 per maund in wholesale and 8 annas per seer in retail. Lime and saji mixed together are filled in earthen vats having holes at the bottom and water is allowed to percolate through. This water and the mixture of oil and tallow are then boiled in iron pans on slow fire for about 24 hours. After cooling it is made into balls. Nearly the whole of the manufactured soap is sold in the town. The earning of a man in this industry is about a rupee a day.

4. Food grains.

1. The following table shows the area, production and prices of the chief crops of the district during the year 1921-22 :—

Name of crop.	Area in acres	Average yield in seers per acre.	Price per md.	
			Rs. a. p.	Rs. a. p.
Juar	... 1,209	352	3 8 0	to 3 14 0
Bajra	... 8,781	350	3 8 0	to 4 8 0
Juar and Arhar	... 42,486	...	...
Bajra and Arhar	... 42,446	...	...
Rice	... 147,151	525	5 0 0	to 10 0 0
Maize	... 7,377	500	3 8 0	
Arhar	... 8,348	425	3 2 0	to 3 12 0

by boiling for about 2 hours after which it is transferred to earthen vats, where on standing for 3 to 4 days the pure saltpetre crystallises out. In this manner from 7 maunds of the crude stuff 3 to 3½ maunds of refined saltpetre are obtained. It is possible to take three such charges of the pan in a day for which about 3 maunds of firewood is required. In some of the refineries dry leaves are used for this work as well. About 5 baskets of dry leaves at 2 annas per basket are required daily. Three men work on a furnace and they are paid at 8 annas per day. The same people bring dry leaves during their leisure hours and can earn about 4 annas extra. All the refined saltpetre manufactured as above is exported to Calcutta and sold there through brokers who charge about 2 per cent. as their commission. The present price of this saltpetre in Calcutta is said to be Rs. 10-8 per maund. The total quantity of refined saltpetre manufactured in the district during the year 1922-23 was calculated to be 3,512 maunds.

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		Rs.	a.	p.
1 maund saji	3	0 0
10 seers lime	0	10 0
10 seers castor oil and tallow	6	8 0
1 maund firewood	1	0 0
			<hr/>	
Total	11	2 0

This soap will be in weight about one maund and it sells at Rs. 16 per maund in wholesale and 8 annas per seer in retail. Lime and saji mixed together are filled in earthen vats having holes at the bottom and water is allowed to percolate through. This water and the mixture of oil and tallow are then boiled in iron pans on slow fire for about 24 hours. After cooling it is made into balls. Nearly the whole of the manufactured soap is sold in the town. The earning of a man in this industry is about a rupee a day.

4. Food grains.

1. The following table shows the area, production and prices of the chief crops of the district during the year 1921-22 :—

Name of crop.	Area in acres	Average yield in seers per acre.	Price per md.						
			Rs.	a.	p.	Rs.	a.	p.	
Juar	... 1,209	352	3	8	0	to	3	14	0
Bajra	... 8,781	350	3	8	0	to	4	8	0
Juar and Arhar	... 42,486	...	...	...	...	...	...	...	...
Bajra and Arhar	... 42,446	...	...	...	...	...	...	...	...
Rice	... 147,151	525	5	0	0	to	10	0	0
Maize	... 7,377	500	3	8	0	...	...	...	...
Arhar	... 8,348	425	3	2	0	to	3	12	0

Name of crop.	Area in acres	Average yield in seers per acre.		Price per md.					
		Acres.	Srs.	Rs.	a.	p.	Rs.	a.	p.
Urd and Mung ...	2,280	190	4	13	0	to	4	0	0
Moth ...	763	200	4	8	0				
Mandua ...	1,161	260	5	8	0				
Kodon ...	2,829	530	5	12	0				
Sawan ...	48,111	340	4	12	0				
Cotton ...	6	400	36	0	0				
Indigo ...	303	10	255	0	0				
Sugarcane ...	25,478	425	18	0	0	to	20	0	0
Til ...	22	140	11	8	0				
Sann hemp ...	1,920	700	9	8	0				
Wheat ...	16,953	475	5	4	0	to	6	0	0
Wheat and gram	41,305	...	...				
Wheat and barley	9,532	...	...				
Barley ...	110,714	510	4	0	0				
Barley and gram	32,685	...	...				
Gram ...	48,270	450	3	2	0	to	3	8	0
Peas ...	92,566	325	3	0	0				
Masur ...	8,446	240	3	0	0				
Tobacco ...	514	500	8	0	0	to	12	0	0
Linseed ...	2,963	325	10	0	0				
Rape and mustard	139	320	8	0	0				

2. *Flour milling industry.*—There are 8 flour mills in the town, all of which are worked by means of oil engines. The mill owners do not grind wheat on their own account, but the grinding is done for the public on a charge of 10 annas per maund. All are working on similar lines. One is mentioned below :—

The flour mill of Ram Lagan Kurmi is situated in Mohalla Telpura. The engine is of 12 H.P. and one chakki is attached to it. The engine and the chakki have been purchased new at Rs. 3,500. The owner is himself doing the driving. Five other men are employed at Rs. 15 to Rs. 5 per month. A bhishti is supplying 2 bags (mashaks) of water daily at one anna per day. The house-rent is Rs. 5 per month. One tin of kerosine oil is consumed in about 3 hours and the cost of the lubricating oil is 8 annas per day. It grinds about 3 maunds of wheat per hour. The average earning is about Rs. 5 per day.

5. Hardware.

(a) *Cutlery work.*—About four families of Lohars in Zamania town are engaged in manufacturing penknives and saraotas (nut-crackers). Penknives are of the office (open) type and nut-crackers are made of brass with steel blades. Old files are generally used and are purchased from Calcutta at about Rs. 32 per maund. Old and broken brass wares are purchased locally at about Re. 1 per seer. Outside men are not employed for this work. Three members of a family working together can make about 50 penknives or a dozen nut-crackers in a day. Penknives are sold at Rs. 12 per gross wholesale or 2 annas each retail, and nut-crackers are sold at Rs. 6 per dozen wholesale or 12 annas each retail. Goods are sent to Benares and Ghazipur and sometimes to Allahabad and Lucknow as well where there are fixed merchants who buy wholesale for selling at their shops. About a dozen knives and nut-crackers are sold daily in the town where customers come from the neighbouring places and buy personally. No mechanical appliances except the ordinary tools, etc., are used. The earning of a man in this industry is about 14 annas per day. The manufacturers state that they are unable to manufacture more as suitable men are not available to work on payment of wages.

(b) *Tin-smithy.*—About half a dozen families in the town are engaged in the industry of manufacturing tin wares (soldered) such as boxes, lotas, chalnīs, mugs, chongas, dibias, sarposhes, lanterns, dhebris, funnels, etc. Empty kerosine oil tins are purchased locally at about 6 annas 6 pies each. A man can make 2 boxes, 4 lotas, 6 chalnīs, 10 mugs, 10 chongas, 12 dibias, 10 sarposhes, 8 lanterns, 40 dhebris or 60 funnels in a day. The average earning of a man in this industry is about 8 annas per day, besides a little of repair work which is brought at their shops. Outside men are not employed for this work.

The following are some of the prices of the articles manufactured :—

	Rs. a. p.	Rs. a. p.
Boxes	1 0 0	to 3 0 0 each.
Pumps for lifting kerosine oil from tins	0 5 0	..

	Rs. a. p.	Rs. a. p.
Chalnis	0 4 0	to 0 6 0 each.
Lotas	0 5 0	..
Dibbas, chongas and dols	0 2 0	..
Dhebris	0 1 0	to 0 0 6 ..
Funnels	0 0 6	to 0 0 3 ..
Sarposhes	0 1 6	to 0 1 0 ..

6. Leather.

(i) Raw materials.

Figures for municipal slaughter-houses show the following number of animals slaughtered during the year 1922-23 :—

Cows, bullocks and buffaloes	... 2,366
Sheep and goats	... 9,245

The total quantity of hides and skins thus available is roughly :—

Hides ... ..	... 590 maunds.
Skins ... ..	... 924 ..

Taking that about the same number of animals are slaughtered in the mufassal every year, it works out the total quantity of hides and skins available from slaughtered animals is :—

Hides ... ..	... 1,180 maunds.
Skins ... ..	... 1,848 ..

The cattle census of 1920 gives the following figures of agricultural stock in the Ghazipur district :—

Cows	... 111,296
Bulls and bullocks	... 173,409
Buffaloes	... 53,772
Young stock	... 160,588
Sheep	... 72,506
Goats	... 71,781

Taking that 2 per cent. of the cattle die every year besides those that are slaughtered, they yield the following :—

Hides ... ..	... 1,806 maunds.
Skins ... ..	... 609 ..

The total quantity of raw materials available in the district, approximately, is :—

	Slaughtered.	Dead.	Total.
Hides ...	1,180	1,806	2,986 maunds.
Skins ...	1,848	609	2,457 ..

The census returns of 1911 show 1,121 workers in hides and skins and 547 makers of shoes, boots and sandals. These figures are now out of date and they do not correctly indicate the present condition of the industry. At any rate it is estimated that more than 50 per cent. of the raw materials obtained in the district is consumed for local use. There are about a dozen dealers in hides and skins, mostly in the town of Zamania, who purchase them in retail from villagers and export them to Cawnpore and Calcutta. Sale in Cawnpore and Calcutta is effected through brokers when wagon loads of the goods are collected. The present price of a hide is Rs. 3 to Rs. 5 and that of a skin 6 annas to 10 annas.

(ii) *Tanning.*

Chamars do the tanning in their old crude manner in almost all large towns and villages like Reoti, Dharhni, Kusian, Naoli, etc.; but the industry is at its best at Pachokhar in Zamania tahsil, where about 80 families of Chamars are engaged in it. This part of the district is deficient in the usual tanning materials; but leaves of mahua and amrut (guava) are used instead. The processes are described in great detail in Mr. Walton's Monograph on leather and are therefore not repeated here. The average earning of a man in this industry is about 8 annas a day.

(iii) *Manufacture of shoes.*

(a) *Indian pattern.*—Chamars who tan hides and skins also manufacture country shoes. Bovine hides are used for uppers and buffalo hides for soles. From a hide a piece for one mote (bucket) is cut out and the remainder is used in making shoes, of which usually a pair can be made. A mote which usually sells for about Rs. 3 can be made by one man in one day. When only shoes are made 6 to 8 pairs can be made from the hide, and it takes about a day for one man to make a pair of shoes which sells at 12 annas to Re. 1. The average earning of a man in this industry is about 8 annas a day.

(b) *English pattern.*—There are about half a dozen shops in the town manufacturing boots, shoes and slippers of English pattern. Leather imported from Cawnpore and Calcutta is used for this purpose. The price of leather for uppers is Rs. 8

to Rs. 10 per piece and that for soles is Rs. 8 to Rs. 16 and suffices for 20 to 40 pairs of soles respectively, while out of the piece for uppers about 16 pairs of pump shoes, 12 pairs of court shoes, 16 pairs of Albert slippers, 10 pairs of Derby shoes or 6 pairs of boots can be made. A pair of shoes or slippers can be made in a day, while it takes about $1\frac{1}{2}$ days for a pair of boots. Some of the manufacturers have engaged one or two men and they are paid their wages by piece at the rate of 14 annas per pair of pump shoes, 15 annas to Re. 1-4 per pair of Derby and other shoes and Re. 1-4 to Re. 1-12 per pair of boots. Pump and Derby shoes are largely in demand. Sheep skin is used for lining and is obtained at 9 annas each. One skin is enough for lining 4 pairs of shoes. For a pair of shoes about one anna 6 pies worth wax, yarn and nails are required and about 5 annas per pair is required for other things such as kotas, banaur, over and magzi (border laces, etc.) The price of a reel of thread is about 3 annas 6 pies and is enough for 20 pairs of shoes. Leather cuttings worth 2 annas are required per pair for heels.

The following are some of the present prices :—

	Cost price.			Sale price.		
	Rs.	a.	p.	Rs.	a.	p.
Pump and court shoes and Albert slippers ...	2	2	0	3	0	0 pair.
Shoes (Derby, etc.) ...	3	0	0	4	0	0 „
Boots ...	4	8	0	6	0	0 „

(iv) *Manufacture of harness.*

Two families of mochis in the town are engaged in the manufacture of harnesses. Almost all the materials used are imported from Cawnpore.

The following are the details for a harness (single) :—

	Rs.
Leather, felt, etc. ...	15
Steel springs (one pair) ...	6
Brass fittings, etc. ...	5
Total ...	26

This takes about 17 days to make and is sold at about Rs. 40. The price of a harness for a pair is Rs. 70 and it takes about a month to make it.

Besides the manufacture of new harness, repairs of old harness are also undertaken. The average earning of a man on the whole is about a rupee a day.

(v) *Manufacture of kuppis.*

About half a dozen families of a special caste of people known as Dabgars are engaged in the manufacture of kuppis or leather bottles used by perfumers for selling scented oils, etc., in the town. Kuppis are of two kinds—kachhi and pacci. Kachhi kuppis are round and thin and are used for selling scented oils, pacci kuppis are flat and thick and are used for selling itr and other more costly essential oils specially for export purposes.

Kuppis are made from inner membranes and intestines of slaughtered animals. Earthen moulds are used and are made by the Dabgars themselves. The clay used is obtained from a neighbouring tank for which no royalty has to be paid. The same clay can be used over and over again.

The following are some useful details :—

Different sizes of kuppis that are made.		Number of kuppis which can be made from one intestine		Number of kuppis which can be made by a man in a day.		Prices per score.					
K.	P.	K.	P.	K.	P.	K.			P.		
						Rs.	a.	p.	Rs.	a.	p.
1 chatak,	1 chatak	30	10	40	20	0	3	0	0	10	0
2 chataks,	2 cha'taks	25	7	50	15	0	4	0	0	12	0
½ seer	½ seer ...	20	5	40	10	0	6	0	1	4	0
¼ "	¼ " ..	10	2	20	5	0	12	0	2	8	0
1 "	" ..	7		15		1	4	0			
1½ seers	" ..	5		10		1	12	0			
2½ "	" ..	2		5		2	8	0			
5 "	" ..	1		2		4	0	0			

NOTE.—K indicates kachhi kuppis and P indicates pacci kuppis

The average earning of a kuppi maker is about 8 annas a day.

7. Miscellaneous.

(a) *Manufacture of fireworks.*

About six families of Muhammadans in the town are engaged in the manufacture of fireworks. The chief ingredients used are sulphur, saltpetre and charcoal. Saltpetre and charcoal are of local manufacture and sulphur is imported, but that also is generally purchased locally from the market. The average earning of a fireworks maker is estimated to be about 12 annas a day. Sometimes they earn more and have a busy day during the marriage season and in Shabebarat, a Muhammadan festival.

The following are some of the present prices of articles manufactured for Shabebarat :—

		Rs.	a.	p.	
Phuljhari	0	12	0 per 100
Jhui	1	8	0 „ „
Chbachhunder	1	8	0 „ „
Gulrez	2	0	0 „ „
Patakha	0	8	0 „ „
Kirri	0	12	0 „ „
Kalangari	1	8	0 „ „
Kuza	2	0	0 „ „
Mahtabi	2	0	0 „ „
Chhoti charkhi	2	8	0 „ „

The following are the prices of some of the articles manufactured for marriage processions :—

Charkhi	...	...	Rs. 1 to 8 annas each.
Kuza	...	...	8 or 16 for a rupee.
Sitaraganj	...	...	3 for a rupee.

(b) *Manufacture of cocoanut huqqas.*

There are about half a dozen shops in the town where huqqas (hubble-bubble) for smoking tobacco are made and sold. Cocoanut shells are imported from Calcutta at Rs. 3 to Rs. 5 per hundred. The middle wooden stems are imported from Azamgarh at 8 to 20 for a rupee. A man can make about 20 huqqas in a day. They are sold at 2 annas to 8 annas each. No outside persons are employed for this work. The average

earning of a man in this industry is about a rupee a day. Huqqas are sold at the shops, and sometimes some petty merchants also come from the neighbouring villages and buy wholesale—about 20 to 40 at a time for sale at their shops.

(c) *Manufacture of smoking tobacco.*

About 15 families, both Hindus and Muhammadans, in the town are engaged in manufacturing smoking tobacco. Local tobacco leaf is mostly used, but sometimes it is mixed with the imported leaf from Jaunpur as this is said to be richer than the Ghazipur tobacco leaf. Two kinds of tobacco are generally made, viz., karua and dorasa. The former is largely in demand and used exclusively by villagers and menials.

The following is said to be the proportion of the ingredients and the approximate prices :—

			Mds.	Rs.
Tobacco leaf	...	...	6	96
Reh	...	...	28	3
Molasses	...	...	16	72
			Total	171

This will make 50 maunds of tobacco and 4 men at 6 annas a day can make it in 4 or 5 days. The leaf is first pounded in a dheki and the remaining things are mixed afterwards. Some water is also added to it, but it does not add to the total weight as it dries up. Its wholesale price is Rs. 4 per maund and is sold at 2 annas per seer in retail.

Better qualities contain less of reh, while spices and khamira are added. Khamira is made by mixing molasses to fruits like plantains, pine apples, etc., and keeping the mixture in earthen jars buried in the ground for several months. It is made locally by the tobacconists themselves. The spices generally used are oils of kahu, laong, etc. For extra superior qualities ilachi and mushk are also used.

(d) *Jail industries.*

The industries of the local jail are carpet weaving, durrie weaving, newar making, moonj mat making, handloom weaving, oil pressing, flour milling and lime burning.

Carpet weaving.—Two looms are working at present. Yarn of no. 10 counts is purchased through the Director of Industries from Messrs. Tulshi Das Tejpal of Hathras at Rs. 7-10 per bundle of 10 lbs. A man can weave 2' x 6" of plain carpet or 2' x 3" of flowered carpet in a day. Carpet is sold at Rs. 5 per seer flowered and Rs. 3 to Rs. 4 per seer black and white. One square yard of carpet weighs approximately 2 seers.

Durrie weaving.—Yarn of No. 10 counts is used for durrie weaving as well, and a man can weave 2' x 2' of durrie in a day. It is sold at Rs. 3 per sq. yard and a square yard of it weighs approximately one seer.

Newar making.—One loom is working. Yarn of No. 10 counts is used for newar weaving as well, and a man can weave 50 yards of newar of about 1 $\frac{3}{4}$ " width in a day. It sells at Rs. 3 per seer, and a seer of it measures about 25 yards.

Manufacture of moonj mats.—Three looms are working at present. Moonj is obtained from Messrs. Jwala Prasad Mohan Lal and Ganga Prasad of Kasganj at Rs. 3-4 per maund. A man can pound 15 seers of it in a day, and a man can make 300 yards of kachcha ban or 10 seers of pacca ban in a day. A man can make 6' x 2' of matting in a day. Mats are sold at Rs. 1 per sq. yard, and one square yard weighs about 2 seers.

Hand loom weaving.—Four looms are working at present. Yarn of No. 10 counts is used for this as well. A man can make 24' x 28" of duster cloth or a bedsheet 7' x 5" in a day. Duster cloth is sold at 10 annas per yard, and its weight is about 3 chataks per yard. A bedsheet is sold for Rs. 3 and weighs about 18 chataks.

Oil pressing.—Two kolhus are working at present. Three seers of sarson is charged at a time in one kolhu and in about 3 hours about 14 chataks of oil is recovered by two men working on it. There are three such charges of a kolhu in a day. The oil is for jail use only and is not sold to outsiders as the jail rates are higher than the market ones.

Flour milling.—Ten chakkis are working at present. Two men working on one chakki can grind 30 seers of wheat or 40 seers of gram in a day. This is exclusively for jail use.

Lime burning.—Kankar is obtained from within the jail premises. Four men can dig out about 200 c. ft. of kankar in about 5 days, and this is enough for one charge of the kiln for

which firewood worth about Rs. 10 is required and yields about 100 c. ft. of lime. This if sold fetches about Rs. 30. It takes about 10 days on the whole for four men to make this quantity of lime.

(e) *The Opium factory.*

To the Government Opium Factory are consigned the poppy products—opium, leaf and trash—of all the opium producing districts of the United Provinces. The factory stands on the high bank of the Ganges and covers an area of about 45 acres, with the right to all alluvial land on the river front. The main buildings or factory proper consist of an inner and outer enclosure. Within the latter are two godowns for the storage of leaf with a capacity of some 25,000 maunds, seven godowns for storing trash, nine sheds for empty chests, one godown for cups with a capacity of about 24 lakhs, workshops, fire-engine, houses and sheds for coal and miscellaneous stores. The inner enclosure contains the buildings connected with the manufacture and storage of opium. These comprise an import shed capable of holding about 10,000 jars or bags of opium, a mal-khana with thirty stone vats to take 47,000 maunds, six godowns fitted with wooden racks to accommodate about 900,000 cakes, a double row of manufacturing and allegation rooms 400 feet in length, four buildings for the manufacture of excise opium, with a yard provided with platforms on which 1,000 trays can be exposed at a time, a laboratory for the assay of opium and the manufacture of alkaloids and of medical opium in cake and powder, buildings and vats for washing bags and for the preparation of lewa or paste, and a godown for stores. For protection against fire there are two steam and fire manual engines, the supply of water being obtained from the numerous masonry tanks. In addition to these there is a system of hydrants in connection with a large water tower, 85 feet high, surmounted by a capacious tank standing in the outer enclosure. By means of these hydrants jets of water can be maintained for several hours at a time on any of the buildings that might be endangered by fire.

The fixed guard at the factory for sentry and search duty consists of 88 men of all grades. The factory is in charge of a departmental-officer, known as Factory Superintendent, who is

also the Opium Examiner. His permanent staff comprises two Assistant Superintendents, an Assistant Opium Examiner, a Store-keeper, an Engineer and eight subordinate assistants. The administration of the factory was re-organized in 1918 and the post of Managing Director created in accordance with the up-to-date practice of large industrial concerns. The rest of the staff remains as before.

The chief function of the factory is the preparation of opium for what may now be called the Strait's markets and that required for excise purposes throughout India and Burma. The extension of the excise operations in the factory has brought about the increase in the number of buildings and the enlargement of the yard for excise work referred to above. The supply of the excise opium for the whole of India and Burma was undertaken by the factory in 1912 on the closing down of the sister factory at Patna.

In the year 1913, 19,106 maunds of 'Malwá' opium, which the merchants of the Central India Agency were unable to dispose of owing to the closing of the China market, and in 1914 a large supply of Barodá opium, were purchased by the Government of India and transferred to the Ghazipur Factory for manufacture into excise opium. A considerable amount of opium is now supplied by the States in Central India, where poppy is grown under State control. The amount so supplied is about 13,000 maunds annually. It is used exclusively for excise opium. During the war a considerable demand for opium and alkaloids sprung up in Europe, owing to the cutting off of the Turkish supply; 1,696,240 lbs. of opium and 2,116 lbs. of morphia were sent by the Factory to England.

Process of manufacture.—The new season's opium arrives from the districts at the beginning of April in jars or bags of one maund each, and, after weighment, is examined in order to classify it according to consistency and determine its purity. The former is necessary in order to determine the amount payable to the grower, and when this is done, the opium is emptied into the stone vats in the malkhana. For testing its purity iodine is employed, as this exposes the presence of starch. Suspected pots sent for examination by the District Opium Officers are confiscated where bad adulteration is revealed or

else are passed for conversion into paste, a fine being imposed according to the degree of impurity. The manufacture of provision opium begins about the end of April, the most important process being the allegation of the different consistencies, so as to reduce the whole to a standard consistence of 71 per cent. This is somewhat a complex undertaking, since atmospheric conditions have to be taken into account. The opium is then made into cakes by trained men, who are paid an anna for every eight cakes, and a man can turn out from 45 to 70 cakes daily. The cakes are made in brass hemispherical moulds, and are then placed in the sun in unglazed earthen cups before removal to the racks in the godown. The storage and care of the opium in the godown is a very important duty, and a large staff is employed to take down the cakes constantly, rub them lightly with the hand, or with a little trash, expose another surface of the cake, and put them up again, the object being to enable the surface to dry evenly throughout, and to prevent damage by mildew or insects.

About the beginning of August they are all taken in hand, inequalities in the shell being smoothed over with leaf and lewa or paste, while finally the cake is coated over with its final layer of leaf, giving it a smooth and finished appearance. By the beginning of November the cakes are mature, and the Collector of the district is then invited to select four for analysis by the Chemical Examiner to Government and the Factory Superintendent at Ghazipur. The result of Chemical Examiner's examination is published at Calcutta for the information of the merchants. The opium is then packed in chests of mango wood with 40 cakes in two layers in each chest, every cake being in a separate compartment, and all corners and crevices are filled in with poppy trash for a padding. All joints and cracks in the chest are covered over with cloth, and smeared with pitch so as to render it damp proof, and then the chest is encased in gunny covering bearing the words "Benares Opium," the number and the Government trade mark. Five hundred chests are made ready daily, and every fourth day a special train is made up for Calcutta. The opium required for Indian consumption, known as excise or abkari opium, is dried by exposure to the sun to a consistency of 90 per cent., and is then pressed into cubical cakes of either one seer or half a seer each. These are then wrapped in two sheets of

Nepal paper each, the inner sheet being slightly oiled to prevent adhesion, and are packed in boxes containing 60 seers apiece. They are issued on indent to the treasuries in the provinces supplied by the factory. The quantity of excise opium now amounts to approximately 7,000 maunds. The demand is steadily falling.

Contraband opium, sent by the Excise Officers to Ghazipur, is examined and, if found fit for use, is employed in making the paste with which the shells of the provision opium cakes are cemented, or else is set aside for the extraction of the alkaloids, morphine and codeine, both of which are made throughout the year from the refuse opium that cannot be used for provision or excise cakes.

Morphine is produced in the shape of pure morphine and its salts, hydrochloride, acetate, sulphate and tartrate codeia is made in pure crystals, some 60 lbs. worth Rs. 8,160 being turned out annually, while the amount of morphine salts may be set down as 300 lbs., valued at Rs. 28,800. Those alkaloids, which are equal in purity to any manufactured in Europe, furnish the entire requirements of the Government Medical Stores in India. Out of the surplus small quantities are sold to Civil Surgeons for use in district dispensaries and licensed chemists and druggists. The export of alkaloids to London has ceased owing to the fall in demand.

Medical opium in cake and powder is prepared from specially selected opium of the finest quality, and is supplied to the Government Medical Store Dépôts chiefly. About 1,000 lbs. of each kind is prepared annually.

Apart from the operations mentioned above, the factory affords employment to a large number of persons in Ghazipur and elsewhere for the manufacture of supplementary requirements. The gunny coverings to the number of about 20,000 are obtained from the Alipore Jail. The Patna Saw Mills having been closed, the chests are obtained from contractors, and among local purchases may be mentioned between 3 to 6 lakhs of earthen cups supplied by the potters at the rate of 250 to the rupee, and from 10 to 12,000 small bamboo mats which are used to separate the two layers in the chest and cost Rs. 3-8 per hundred.

The hands employed in the factory vary according to the season, ordinarily ranging from 500 to 2,000, though in the busy season, from April to June, the average rises to about 3,500.

8. Oil industry.

There is no power mill in the district for the extraction of oil except the one—the Newatia Oil and Flour Mills and Iron Workshops under erection near the Ghazipur City railway station. It is a private owned works belonging to a local Marwari firm of Messrs. Kesho-Ram Ram Prasad. A Lanchashire boiler and a steam engine of 240 H. P. have been ordered from England. It will have 100 kolhus and crush about 300 maunds of oilseeds daily. For the present the buildings are under erection and it will still take about a year to start work regularly.

Oils are at present extracted in bullock-driven wooden kolhus of the ordinary type similar to those used in other parts of the provinces. Three to $3\frac{1}{2}$ seers of seed are charged at a time which can be crushed in a kolhu in about 3 hours; thus there are four charges of the kolhu in 12 hours and about 14 seers of seeds crushed in a day in one kolhu, 12 hours being regarded as the maximum daily working period. The yield of oil depends upon the kind and the quality of the seeds used, the type of the crushing machinery remaining constant. Mustard and sesamum yield about 33 per cent. linseed about 28 per cent., while castor and nim yield about 50 per cent. as the outer shells of the last two seeds are removed before crushing.

	Rs. a. p.
Price of 14 seers of sarson seeds	... 2 6 0
" " $4\frac{1}{2}$ " " " oil ...	... 3 0 0
" " $9\frac{1}{4}$ " " " oil-cake ...	... 0 14 0
Total	... 3 14 0

As this quantity is crushed in a day, the total earning of a teli works out to about Re. 1-8, from this taking out 8 annas as the cost of keeping a bullock in the town and 2 annas as his other expenses, his net earning comes to about 14 annas a day. Ordinarily a village teli does not have to spend anything on the up-keep of the bullock during the greater portion of the year as

he cuts grass himself or a member of his family does it for him. This costs him nothing.

A bullock costs Rs. 20 to Rs. 40 and a kolhu Rs. 15 to 20. Sarson, barre, sesamum and linseed cakes are fed to bullocks. Castor cake is generally burnt by the teli as fuel. The use of the cake as manure is either not known in the district or is considered too costly to be used as such. Nim oil is not sold in the market, but the seeds are brought to the teli by the village women who collect and clean them, and pay 2 annas per charge of the kolhu to the teli for crushing. The extraction of oil from these seeds is easy and quick. The oil-cake is used as manure and not burnt. Castor and nim oils are used in the villages only for lighting purposes. Cotton seeds are crushed only to a very small extent in the district.

The earning of a teli would have been more than this if he could store the oilseeds in season; but, due to pecuniary difficulties, he has to purchase them from the market from time to time at rates current at the time of purchases, which are usually higher than the season rates. An oilman's co-operative agency may be able to offer some solution of this difficulty.

9. Other industries connected with edibles.

(a) *Manufacture of sweetmeats.*

The census of 1911 has returned 410 halwais in the district. The halwais of towns only have some trade of importance and make jalebi, imirti, balushahi, motichur, ghiwar, pera, barfi, gupchup, laddoo, khajur, khaja, khurma, papri, lakhta, etc., from ghi, sugar, flour and khowa (dehydrated milk).

Sweets sell at 12 annas to Re. 1-8 per seer. A village halwai keeps only a few varieties and his sale does not exceed Re. 1 a day. A town halwai soon becomes a money lender and owner of houses in the town. He advances money to milkmen and petty shopkeepers whose occupation is allied to his business. A halwai can make 15 to 30 per cent. Java sugar is mostly used for this industry as it saves much of their time and trouble required for refining country sugar.

(b) *Manufacture of khowa (dehydrated milk).*

About 500 families of Ahirs in about 25 villages like Aunrihar, Badhupur, Araziganj, Khurchana, Ahladpur, Hathawra,

Marai, Burhipur, Bambnaoli, Raispur, Anaitpur, Inamipur, etc., in the Saiyedpur tahsil are engaged in the industry of keeping cows and buffaloes. Some of these people purchase milk from others as well, make khowa on their own account and take khowa and milk to Benares daily and supply to the halwais and milkmen who are their fixed customers. Milk is purchased at about 8 seers for a rupee. The amount of khowa obtained from milk is about 25 per cent. The Ahirs have from 5 to 50 cows and buffaloes each. No outside men are engaged for the work. A member of the family takes the animals for grazing and a man can take 50 animals. The average yield of milk from a buffalo is about 4 seers and that from a cow about 2 seers a day. Besides grazing, the animals are also fed on some bhusa, etc., at home, and the cost for this is about 2 annas per animal per day. For making khowa, cowdung cakes are used as fuel. Khowa is sold at Benares at about a rupee a seer. It is estimated that about 15 maunds of khowa and about the same quantity of milk is daily sent to Benares from these industrial centres, chiefly from Aunrihar station.

(c) *Manufacture of ice-creams.*

About eight persons in the town of Ghazipur are engaged in the industry of manufacturing ice-creams by small ammonia machines. They have one to four machines each. These machines are imported from Delhi and are of different sizes from $1\frac{1}{2}$ to 3 seers capacity and their prices range from Rs. 100 to Rs. 150 each. Milk and orange ice-creams are mostly made. One charge of the machine requires about 4 hours. There are three charges in a day. Firewood worth about 2 annas is required per charge. Cylinders filled with ammonia are imported from Delhi, and when they become empty they are sent back there for being recharged at a cost of about Rs. 50 each. One charge of the cylinder lasts for about 4 months.

	Rs.	a.	p.
Price of 12 seers of milk boiled to 8 seers ...	2	4	0
„ „ $2\frac{1}{2}$ seers sugar ...	1	2	0
„ „ firewood ...	0	6	0
Wages of a servant for a day ...	0	8	0
Total	4	4	0

There is a waste of about one seer of cream in this due to melting, etc.

Price of 9 seers of cream at 12 annas a seer, Rs. 6-12. As this quantity is manufactured daily, the gross earning of a man having one machine is Rs. 2-8. From this taking out Re. 1 as his other expenses such as house-rent, interest on the capital invested, charges of recharging the ammonia cylinders, repairs to the machine, etc., his net earning works out to about Re. 1-8 a day. Ice-cream is sold in the town by hawking in the streets. As the industry is seasonal, the manufacturers have to do some other work during the cold season such as selling tea, etc.

10. Perfumery.

Ghazipur has been famous since a very long time for its roses, but their cultivation in Ghazipur has much declined during recent years, partly owing to a general rise in the prices and wages and partly to a shrinkage of area under roses here.

There are about ten factories here for the manufacture of scented oils, etc. The articles usually manufactured are oils and itrs of rose, bela, chameli and keora, and rose and keora waters. The fields producing these flowers are situated near the town and the following acreages have been returned under the different flowers during the year 1922-23 :—

	Acrea.			
Chameli	141
Bela	37
Rose	31
Keora	3

Bela flowers are obtained during the months of April to July, chameli flowers during the months of October and November, keora flowers during the months of September and October and rose flowers during the month March-April.

The following were the approximate prices of the different flowers during the year 1921-22 :—

	Rs.	
Rose	175 per lakh flowers.
Chameli	32 per maund.
Bela	14 „ „
Keora	32 „ „

Til is imported mostly from Bettia, Garhwa, etc. Stills used are of the old and inefficient type. The process of manufacture is the same as that practised at Jaunpur, Kanauj, etc. A portion of the articles is exported and also sold locally at the shops, especially during the marriage seasons, but their fixed customers are petty shop-keepers in the towns of Bengal and Bihar who buy the articles at wholesale rates.

The following are the present prices of some of the commodities here :—

	Rs. a. p.	Rs. a. p.	
Rose water ...	1 0 0	to 3 0 0	per quart bottle.
Koera water ...	1 0 0	to 2 0 0	„ „ „
Baid-Mushk water	1 0 0	to 1 8 0	„ „ „
Essential oil of roses	140 0 0		per tola.
(Rooh gulab).			
Rose itr ...	2 0 0	to 40 0 0	per tola.
Khas itr ...	3 0 0	to 5 0 0	„ „
Chameli itr ...	1 0 0	to 4 0 0	„ „
Joohi oil ...	1 0 0	to 4 0 0	„ „
Molsari and gule-hina.	1 0 0	to 2 0 0	„ „
Champa itr ...	1 0 0	to 2 0 0	„ „
Pandari, kusum and harsinghar.	1 0 0	to 2 0 0	„ „
Hina and muskh-hina.	1 0 0	to 2 0 0	„ „
Mishkamber itr ...	1 0 0	to 5 0 0	„ „
Saffron itr ...	1 0 0	to 3 0 0	„ „
Agar itr ...	2 0 0	to 10 0 0	„ „
Podina itr ...	1 0 0	to 2 0 0	„ „
Nag-kesar itr ...	1 0 0	to 2 0 0	„ „
Kabi itr ...	0 4 0		per tola.
Bela oil ...	2 0 0	to 8 0 0	per seer.
Jasmine oil ...	2 0 0	to 4 0 0	„ „
Masala oil ...	1 0 0	to 4 0 0	„ „
Gule-hina oil ...	1 0 0	to 4 0 0	„ „
Juhee oil ...	1 0 0	to 4 0 0	„ „
Keora oil ...	1 0 0	to 4 0 0	„ „
Rose oil ...	1 0 0	to 4 0 0	„ „
Lemon oil ...	1 0 0	to 4 0 0	„ „

	Rs.	a.	p.	Rs.	a.	p.		
Kahoo oil	...	4	0	0	to	8	0	0 per seer.
Almond oil	...	4	0	0	to	8	0	0 ,, ,,
Sandal oil	...	38	0	0				per seer.
Rose confection	...	1	0	0	to	2	0	0 per seer.
(Gulqand affabi).								
Gulqand Seoti	...	1	0	0	to	2	0	0 ,, ,,

11. Pottery and glass.

Pottery.

The pottery of the district is not of any note. Ordinary earthen pots and other articles of the usual country types such as gharas, jhanjhars, surahis, purwas, handis, cups and saucers, huqqas and chilams and ordinary country tiles are manufactured in almost all large towns and villages. The requisite clay is obtained from tanks at no great distance from site. These tanks belong to the zamindars who do not generally get any royalty for it, but in return get their requirements of pottery ware either free of charge or at a reduced rate than what prevails in the market.

Glass.

(1) *Manufacture of jars (karabas) of crude glass.*—There is only one man in the town who manufactures jars (karabas) of crude glass such as are used by the perfumers for keeping rose and keora waters. Broken crude glass churis are purchased at about Rs. 1-8 per maund from the churi dealers of the city and the neighbouring villages. The process* of manufacture is the same as is practised by the glass blowers of Benares for the manufacture of glass for the tikuli industry. One man can make about 50 karabas in a day, consuming about Rs. 8 worth of firewood. A karaba has a capacity of about $1\frac{1}{2}$ gallons and requires about $\frac{1}{2}$ a seer of glass to make it. The present price of a karaba is about 4 annas. Two more men are required for the work as assistants and they are generally the members of the same family. The work is done only for about 3 months in the year, i.e., during the rose and keora seasons. The industry has much declined during recent years due to the decline of the perfumery industry upon which it is dependent.

* See Report on the Industrial Survey of the Benares district pages 85 and 86.

(2) *Manufacture of crude glass churis.*—About 20 families of Churiharas are engaged in the industry of manufacturing crude glass churis in villages like Nonahra, Paharipur, Subukharapur, Sohwal, etc. Crude glass is manufactured from reh and also broken churis are purchased from the churi dealers and remelted to manufacture bangles. Earthen pans are heated by means of wood fire; when the pan becomes red-hot, powdered reh is put in it and heated for about an hour, when it melts more reh is put in it; by the evening about a maund of reh is thus treated from which about 20 seers of crude glass is obtained. This requires about a maund of firewood. Four to 6 men work on one bhatthi. The glass is taken out and the next day it is again heated and worked. No extra-firewood is required for heating it the next day, as when the same bhatthi in which glass is being made from reh on one side, this work is also done on the other. The glass is heated for about an hour, and when it becomes soft, churis are made out of it. Various kinds of tools and implements (such as rods, etc.) are used. A man can make about 700 churis in a day. Churis are sold at about 1,200 for a rupee. There is not much profit in this industry now and there are very few people now who make crude glass from reh and most of the churiharas now remelt broken churis imported from Ferozabad and other places. Broken churis are purchased from the churi dealers at about 2 annas per seer in retail, but there is not much demand for them, because imported churis are now obtainable everywhere more easily and cheaply.

12 Textiles.

(1) *Cotton spinning and weaving.*

There is no power mill in the district, but handloom weaving is practised in almost all large towns and villages. The census of 1911 has returned 3,175 persons as engaged in cotton spinning, sizing and weaving in the district, but these figures are now out of date and they do not correctly indicate the present condition of the industry. At any rate it is estimated that there are about 800 looms working in the district, mostly in the Ghazipur and Muhammadabad tahsils.

At Ghazipur there are about 400 weavers in the town and suburbs. Throw-shuttle looms are largely in use; fly-shuttle looms are only slowly coming into use. The weavers are mostly

centred in mohallas Barapura, Champia Bagh, Juran Sahid, Nuruddinpara, Shujawalpur, Mustafabad, Razdepur, Kapoorpur, Mianpara and Barbarahna within town limits, as also in the neighbouring villages of Kathwalia, Bakshupur, Sheikhpura, Noorpur, Ranipur, Zangipur, etc. The articles chiefly manufactured are angochhas (or pieces of cloth used in place of towels) which are exported mostly to Bengal and Assam. Yarn of No. 20½ counts is usually used and is chiefly imported from Cawnpore and Bombay. Its present price here is about Rs. 10-8 per 10 lbs. bundle.

The colours used are mostly aniline and the dyeing is done by the weavers themselves.

The following are some of the present prices of the angochhas :—

	Rs.	a.	p.	
1½ yards × 17"	...	0	14	0 per chowka or 4 pieces.
1½ yards × 22"	...	1	4	0 .. " " " "
1½ yards × 27"	...	1	10	0 .. " " " "
2 yards × 32"	...	2	0	0 .. " " " "
2½ yards × 36"	...	2	8	0 .. " " " "

Angochhas are generally made on throw-shuttle looms and a man can make 12 angochhas of size 1½ yds. × 17" or 4 angochhas of size 2½ yds. × 36" in a day of 10 hours. The average earning of a man in this industry is about a rupee a day. There are about a dozen dealers in the town who purchase the angochhas from the weavers and export.

Besides angochhas, dhotis, saris and garha thans are also made for local use and a man can weave 12 yards on fly-shuttle looms or 6 yards on throw-shuttle looms in a day. In Muhammadabad there are weavers in several towns and villages like Muhammadabad, Parsa, Gangauli, etc. Throw-shuttle type of looms are generally used. Mostly garha cloth is woven. Yarn of different counts is used in different places, but cloth of the kind in which yarn of 13½ counts is used for warp and of 16½ counts for weft is largely manufactured. A man can weave about 7 yards of 30" width in a day and his average earning is about 12 annas a day. The weavers bring the manufactured cloth to the bazar of Muhammadabad on market days for sale where purchasers, who are petty merchants, come even from long distances like places in Bihar and buy 100 to 150 pieces each for sale at their shops. The present price of a garha than of 18 yards × 27" is Rs. 3-8 to Rs. 5.

The industry is at its best in the town of Bahadurganj where there are about 80 families of weavers who, in addition to garha weaving, have specialized themselves in weaving doria or striped cloth from yarn of finer counts, say up to 70, which is imported from foreign countries, chiefly England. For this class of work fly-shuttle looms are mostly used, and a man can weave 6 to 9 yards of 32" width in a day, according to the kind of yarn used. The average earning of a man in this industry is about a rupee a day. The weavers take all their manufactured cloth to Mau where there are arhatias or brokers who purchase it for export to other places.

The following are some of the present prices of the different kinds of yarn used :—

	Rs. a. p.		
8 counts	...	7 0 0	per bundle of 10 lbs.
10½ "	...	8 0 0	" " " " "
13½ "	...	9 0 0	" " " " "
16½ "	...	10 0 0	" " " " "
20 "	...	11 8 0	" " " " "
30 "	...	14 0 0	" " " " "
40 "	...	17 0 0	" " " " "
70 "	...	24 0 0	" " " " "

Yarn of 40 counts and above is foreign imported and that of lower counts is bought from the Indian mills.

The following are some of the present prices of cloth at Bahadurganj :—

	Rs. a.
Doria of 30 counts yarn, 9 yards × 32" ...	3 0 per piece.
" " 40 " " 9 yards × 30" ...	4 2 " "
" " 70 " " 9 yards × 32" ...	5 8 " "
Garha cloth, 18 yards × 36" ...	Rs. 6 to Rs. 7-8. per piece.

Indigo is used for dyeing the yarn and the work is done by dyers, of whom there are about four families. They charge for dyeing at the rate of 2 annas to 4 annas per lachhi or hank of yarn according to the quality of the work.

A small quantity of hand-spun yarn is also available in the town markets. Its present price is about Rs. 2 per seer, but there is not much demand for it and its quality is much inferior as compared with the high prices.

The weavers generally work at their homes and their women and children help in the preliminaries during leisure hours. Various attempts have been made in several places to put the hand-loom weaving industry on a small factory system, but did not meet with any amount of success due to the defective system of payment of daily wages to the weavers. Success in this direction can only be achieved by inducing the weavers to accept the piece system of the payment of wages, i.e., at a certain rate per yard of cloth.

(ii) *Dyeing and printing.*

There are four families of dyers and chhipis in the town who print lihafs, toshaks, dastarkhans, purdas, etc., on the customers supplying their cloth. The colour used is mostly alizarine and is said to be fast, but a little defect in the colours does not matter to the buying public which uses most of the articles only after being stuffed with cotton. The prints have not to stand frequent washing. The cloth for printing is obtained from the local markets.

The following are some of the charges :—

	Rs.	a.	p.	
Lihafs ...	...	1	0	0 each.
Toshaks ...	...	0	12	0 ,,
Dastarkhans and pur-	0	2	0	per yard.
das.				

A man can print a lihaf in about $1\frac{1}{2}$ days, as much of the time is taken in washing, etc. The average earning of a man in this industry is about 12 annas per day.

(iii) *Sheep rearing and blanket weaving.*

About 150 families of Gadarias are engaged in the industry of sheep rearing and blanket weaving, mostly in the villages of Andharipur, Dharhni, Nagsar, Sohwal, Betabar, Garua, Khan-ka-pura, Jeopur, Hariharpur, Reotipur, Pachokhar, Dildarnagar, Naoli, Gagaran, Fatehpur, Utraulia, Usia, Basuka, etc. The industry is at its best at Andharipur where there are 15 families of Gadarias, but very few of these keep sheep and most of them carry on their work by importing wool from the neighbouring districts like Mirzapur, Azamgarh, etc.

The Gaderias themselves go to the different places and buy wool personally, the present price of which is Rs. 25 to Rs. 32 per maund according to its colour and quality. White wool sells at a higher rate than the black one, but there is not much of it on this side.

Two families here keep about 100 sheep each. The price of a sheep is about Rs. 6. In one year the number of sheep would become double, but due to epidemics amongst them, which are often very deadly and uncertain, they increase only by about 25 per cent. Sheep are generally kept upon grazing and it is very seldom, and that also during the dry seasons, that they are required to be fed at home. Two men are required to keep 100 sheep. This is generally done by the Gadarias themselves, but if they employ outsiders they are paid at about Rs. 7 per month each. Sometimes sheep are made to sit in fields in the nights to retain their droppings which serve as excellent manure, and for this purpose the owner of the fields has to feed the keepers of the sheep for as many nights as they require them. For fertilizing an acre of land 100 sheep will be required to be kept for at least 7 or 8 nights continually.

A sheep is cropped thrice during the year, in the months of *Asarh*, *Kartik* and *Phagun*. The wool obtained in *Phagun* is the best and most soft. In one cropping a sheep yields about 2 to 3 chataks of wool. The sheep are thoroughly washed and cleaned on the day previous to cropping. The wool is then carded. This work is generally done by women, who also do the spinning on wheels. One woman can card and spin about $\frac{1}{2}$ a seer of wool in a day. For making a blanket, pattis of about 12" width are woven which are afterwards sewn together to give the required width. The appliances used for spinning and weaving are very simple and are made by the Gadarias themselves. A good blanket is 9' \times 5 $\frac{1}{2}$ ' in size and requires about 4 seers of wool. It takes about 3 days to weave it and is sold at about Rs. 12. Before weaving, the yarn is stiffened and smoothened with a paste made of nim, barre or sarson oil-cake is required. After the blanket is finished, the oil-cake is nulled by soaking the blanket in water and rubbing it with feet (the process is known as *mijai*). It also makes the blanket shrink and become thick. Customers come from the

neighbouring villages and buy personally. The industry is carried on only as subsidiary to agriculture.

13. Wood industry.

There is no industry in wooden articles in the district, except that carpenters work in almost every village and help in the manufacture and repair of agricultural implements. The wages of carpenters in the town are ranging from 10 annas to 14 annas per day.

CHAPTER III.

SUGGESTIONS FOR THE IMPROVEMENTS OF THE VARIOUS DISTRICT INDUSTRIES.

Sajji industry.—There has been a growing demand for caustic soda for the various industries and the possibilities of its manufacture from reh or sajji is worth investigation by technological experts.

Cutlery works.—The Lohars of Zamania would be well advised to join together on co-operative system which would help them to put the industry on a sound commercial basis.

Perfumery.—The acreage under roses is fast shrinking, and unless there is any Government help for extending its cultivation by taqavi, etc., this industry has no future. If a Demonstration School as has already been suggested for the perfumery industry of Jaunpur be started there, such of the perfumers of Ghazipur as may be willing to learn work should be given every facility and encouragement.

Handloom weaving.—Success in the attempt of putting the handloom weaving industry on a small factory system can only be achieved by inducing the weavers to accept the piece system of the payment of their wages.

Art industries.—Some better class of articles should be exhibited at the railway stations.

CHAPTER IV.

STATISTICS.

1. Ornamenting of bangles.

1. *Raw material*—*Import*—

- (a) *Quantity*.—About 100,000 churis and about 600 tolas of salma, sitara and gokhru.
- (b) *Place of origin*.—Churis from the villages of Utraulia, Rasulpur, Nonahra, Ghauspur, Shadiabad, Karimuddinpur, Yusufpur, etc., and salma, sitara and gokhru from Benares.
- (c) *Value*.—Churis worth about Rs. 85 and salma, sitara, etc., worth about Rs. 150.

Export—

- (a) *Quantity*.—About 2,400 sets of 32 churis each.
- (b) *Place of consignment*.—To the neighbouring villages as well as to Ballia, Muzaffarpur, etc.
- (c) *Value*.—About Rs. 7,200.

2. *Manufacture*.—Household industry.

- (a) *Number of men employed*.—About 50 men in all.
- (b) *Wages and system of payment*.—No outside men are employed on wages, but the members of the family do the work themselves. The average earning of a man is about 8 annas per day.
- (c) *Marketing system*.—Customers come and buy personally.
- (d) *Profit*.—About 20 per cent.
- (e) *Suggestions*.—The better class of articles should be displayed at railway stations.

2. Zardozi work.

1. Raw material—

Import—

(a) *Quantity.*—About 1,000 tolas of salma, sitara and gokhru, etc.

(b) *Place of origin.*—Delhi and Benares.

(c) *Value.*—Rs. 375.

Export.—There are no exports in this industry as nearly all the caps are sold locally at the shops.

2. Manufacture.—Household industry.—

(a) *Number of persons employed.*—About 8 men in all.

(b) *Wages and system of payment.*—Wages are paid at 6 annas to 10 annas per cap; average earning of a man is about 8 annas a day.

(c) *Marketing system.*—Customers come and buy personally.

(d) *Profit.*—About 10 per cent.

(e) *Suggestions.*—The better class of articles should be displayed at the local railway station.

3. Building stone and articles made of stone.

1. Raw material—

Import—

(a) *Quantity.*—About 9,795 c. ft.

(b) *Place of origin.*—Dagmagpur, Sihora and Chunar.

(c) *Value.*—About Rs. 27,180.

Export.—There are no exports in this industry.

Use.—All the imported stone is used locally.

2. Manufacture.—Household industry.

(a) *Number of persons employed.*—About 10 persons.

(b) *Wages and system of payment.*—Piece system which comes to 10 annas to 14 annas a day for making articles of stone as detailed in Chapter II.

(c) *Marketing system*.—There are shops in the town where customers come and buy personally.

(d) *Profit*.—About 12 per cent.

4. Sajji making.

Import.—There are no imports in this industry.

Export—

(a) *Quantity*.—About 25,000 maunds of sajji.

(b) *Place of consignment*.—Mostly to Calcutta.

(c) *Value*.—About Rs. 1,50,000.

Manufacture.—Household industry.

(a) *Number of persons employed*.—About 3,583 persons.

(b) *Wages and system of payment*.—No outside persons are employed on wages, but the members of the family do the work themselves. Earning of a man is about 5 annas a day.

(c) *Outturn*.—About 25,000 maunds of sajji.

(d) *Marketing system*.—There are fixed customers

(e) *Profit*.—About 50 per cent. and sometimes more to the dealers.

(f) *Suggestions*.—The possibilities of the manufacture of caustic soda from sajji is worth investigation by technological experts.

5. Saltpetre refining.

1. Raw material—

Import—

(a) *Quantity*.—About 7,000 maunds of crude saltpetre.

(b) *Place of origin*.—From the neighbouring villages of this district as well as of the neighbouring districts of Bihar.

(c) *Value*.—About Rs. 27,000.

Export—

(a) *Quantity*.—About 3,512 maunds of refined saltpetre and about 1,386 maunds of Kuthia saltpetre,

(b) *Place of consignment.*—Calcutta.

(c) *Value.*—About Rs. 44,822.

2. *Manufacture.*—On a small factory basis.

(a) *Working capital.*—About Rs. 15,000.

(b) *Labour.*—Labour available locally.

(1) *Number of persons employed.*—About 30.

(2) *Wages and system of payment.*—Daily wages of 8 annas to men who work on refining saltpetre and for the manufacture of Kuthia saltpetre the system of payment is that the men get half of the produce which comes to about 5 annas per day for a man?

(c) *Total outturn.*—About 3,512 maunds of refined saltpetre and about 1,386 maunds of Kuthia saltpetre.

(d) *Profit.*—About 10 per cent.

(e) *Marketing system.*—There are brokers in Calcutta for its sale.

(f) *Mechanical appliances.*—No mechanical appliances are used, except the ordinary pans, stirrers, etc.

6. Soap manufacture.

There are no exports and imports in this industry as all the raw materials are purchased locally and all the manufactured soap is consumed locally.

Manufacture.—Household industry.

(a) *Number of persons employed.*—About 5 persons.

(b) *Wages and system of payment.*—No outside people are employed on wages; the members of the family do the work themselves, and the average earning of a man is about a rupee a day.

(c) *Total outturn.*—About 250 maunds of soap annually.

(d) *Marketing system.*—There are fixed customers who are petty shop-keepers of the town; they come and buy personally.

(e) *Profit.*—About 20 per cent.

7. Flour milling industry.

Imports and exports.—There are no imports and exports in this industry as wheat is brought by the public from the local market and grinding is done by the mill-owners for them.

Manufacture.—On a small factory system.

- (a) *Working capital.*—About Rs. 5,000.
- (b) *Labour.*—Labour available locally.
 - (1) *Number of persons employed.*—About 6 persons.
 - (2) *Wages and system of payment.*—Monthly system ranging from Rs. 15 to Rs. 5 per month.
- (c) *Total outturn.*—About 11,000 maunds of wheat flour annually.
- (d) *Profit.*—About 10 per cent.
- (e) *Marketing system.*—Customers come and get their wheat ground on cash payment.
- (f) *Mechanical appliances.*—Oil-engine and chakki.

N.B.—The H.P. of the engines used in the various mills is given in the Directory at the end.

8. Cutlery works of Zamania.

1. Raw material—

Import—

- (a) *Quantity.*—About 10 maunds of old steel and about 10 maunds of old brass wares.
- (b) *Place of origin.*—Old files are purchased from Calcutta and old brass wares are purchased locally.
- (c) *Value.*—Old steel worth about Rs. 320 and old brass wares worth about Rs. 400.

Export—

- (a) *Quantity.*—About 50 gross of penknives and about 12 gross of nut-crackers.
- (b) *Place of consignment.*—To the neighbouring villages as well as to Benares and Ghazipur and sometimes to Allahabad and Lucknow.
- (c) *Value.*—About Rs. 1,200.

2. *Manufacture.*—Household industry.

- (a) *Number of persons employed.*—About 3 men.
- (b) *Wages and system of payment.*—No outside persons are employed on wages; the members of the family do the work themselves, and the earning of a man is about a rupee a day.
- (c) *Total outturn.*—About 60 gross of penknives and about 15 gross of nut-crackers.
- (d) *Marketing system.*—Customers come and buy personally.
- (e) *Profit.*—About 20 per cent.
- (f) *Suggestions.*—The manufacturers would be well advised to join together on co-operative system which would help them to put the industry on a sound commercial basis.

9. *Manufacture of shoes of Indian pattern.*

1. *Raw material*—

Import—

- (a) *Quantity.*—About 10,143 hides and skins.
- (b) *Place of origin.*—From the neighbouring villages.
- (c) *Value.*—About Rs. 26,429.

Export—

- (a) *Quantity.*—About 67,000 pairs of shoes.
- (b) *Place of consignment.*—To the neighbouring villages.
- (c) *Value.*—About Rs. 58,000.

2. *Manufacture.*—Household industry.

- (a) *Number of persons.*—Two to 3 persons.
- (b) *Wages and system of payment.*—No outside men are employed on wages; the members of the family do the work themselves, and the earning of a man is about 8 annas a day.
- (c) *Total outturn.*—About 67,000 pairs of shoes.
- (d) *Marketing system.*—Customers come and buy personally.
- (e) *Profit.*—About 10 per cent.

10. Manufacture of shoes of English pattern.

1. Raw material—

Import—

- (a) *Quantity*.—About 360 pieces of tanned leather for uppers, 200 pieces of sole leather and about 125 pieces of sheep skin for lining.
- (b) *Place of origin*.—Cawnpore and Calcutta.
- (c) *Value*.—About Rs. 6,000.

Export.—There are no exports in this industry as all the shoes manufactured are mostly used in the town.

2. Manufacture.—Household industry.

- (a) *Number of persons employed*.—About 3 men.
- (b) *Wages and system of payment*.—Wages are paid by piece; 10 annas to 14 annas for pump shoes, court shoes and Albert slippers; 15 annas to Re. 1-4 for shoes (Derby, etc.), and Re. 1-4 to Rs. 1-12 for boots. The average earning of a man comes to about a rupee a day.
- (c) *Total outturn*.—About 3,600 pairs of boots, shoes and slippers.
- (d) *Marketing system*.—Customers come and buy personally.
- (e) *Profit*.—About 15 per cent.

11. Manufacture of smoking tobacco.

1. Raw material—

Import—

- (a) *Quantity*.—About 200 maunds of tobacco leaf.
- (b) *Place of origin*.—Jaunpur.
- (c) *Value*.—About Rs. 6,500.

Export—

- (a) *Quantity*.—About 5,400 maunds of manufactured tobacco.
- (b) *Place of consignment*.—To the neighbouring villages and also to Ballia and other adjacent places.
- (c) *Value*.—About Rs. 31,000.

2. *Manufacture*.—On a small factory basis.
- (a) *Working capital*.—About Rs. 2,000.
 - (b) *Labour*.—Labour available locally.
 - (1) *Number of persons employed*.—Five to 15 men in each factory.
 - (2) *Wages and system of payment*.—Daily wages at 6 annas per day.
 - (c) *Total outturn*.—About 7,300 maunds of manufactured tobacco.
 - (d) *Profit*.—About 20 per cent.
 - (e) *Marketing system*.—Customers come and buy personally.
 - (f) *Mechanical appliances*.—No mechanical appliances used, except the ordinary dheki, etc.

12. *Manufacture of cocoanut huqqas.*

1. *Raw material*—

Import—

- (a) *Quantity*.—About 43,200 cocoanut shells and about the same number of middle wooden pipes.
- (b) *Place of origin*.—Cocoanut shells from Calcutta and the middle wooden pipes from Azamgarh.
- (c) *Value*.—About Rs. 4,608.

Export—

- (a) *Quantity*.—About 43,000 huqqas.
- (b) *Place of consignment*.—To the neighbouring villages.
- (c) *Value*.—About Rs. 10,000.

2. *Manufacture*.—Household industry.

- (a) *Number of persons employed*.—One or 2 men.
- (b) *Wages and system of payment*.—No outside persons are employed on wages; the members of the family do the work themselves, and the earning of a man is about a rupee a day.
- (c) *Total outturn*.—About 43,000 huqqas.

(d) *Marketing system.*—Customers come and buy personally.

(e) *Profit.*—About 15 per cent.

13.—Perfumery.

1. *Raw material*—

Import—

(a) *Quantity.*—About 4,500 maunds of til.

(b) *Place of origin.*—From Bettia, Garhwa, etc.

(c) *Value.*—About Rs. 68,000.

Export—

(a) *Quantity.*—About 1,250 maunds of scented til and oil, 6 maunds of itr and about 250 maunds of rose and keora-waters.

(b) *Place of consignment.*—To Jaunpur, Kanauj and almost all large towns of Bengal and Bihar.

(c) *Value.*—About Rs. 1,23,000.

2. *Manufacture.*—On a small factory basis.

(a) *Working capital.*—Rs. 1,000 to Rs. 5,000.

(b) *Labour.*—Labour available locally.

(1) *Number of persons employed.*—Five to 20 men.

(2) *Wages and system of payment.*—Daily and monthly wages both. Daily wages of 6 annas to 8 annas per day and monthly Rs. 10 to Rs. 15 per month.

(c) *Total outturn.*—About 1,500 maunds of scented til and oil, 8 maunds of itr and about 300 maunds of rose, keora and other waters.

(d) *Profit.*—About 15 per cent.

(e) *Marketing system.*—There are fixed customers and to some extent advertisement is also resorted to.

(f) *Mechanical appliances.*—No mechanical appliances are used, except the ordinary stills, etc.

14. Manufacture of jars of crude glass.

1. Raw material—

Import—

- (a) *Quantity.*—About 6 maunds of broken churis of glass.
- (b) *Place of origin.*—From the churi dealers of the town and the neighbouring villages.
- (c) *Value.*—About Rs. 9.

Export.—There are no exports in this industry as all the manufactured karabas are used locally.

2. Manufacture.—Household industry.

- (a) *Number of persons employed.*—About 3 persons.
- (b) *Wages and system of payment.*—No outside men are employed on wages; the members of the family do the work themselves, and the average earning of the chief is about Rs. 2 a day and that of the assistants about Re. 1 a day each.
- (c) *Total outturn.*—About 500 karabas.
- (d) *Marketing system.*—There are fixed customers in the town who place orders beforehand.
- (e) *Profit.*—About 20 per cent.

15. Textiles.

(i) *Angocha weaving.*

1. Raw material—

Import—

- (a) *Quantity.*—About 3,600 maunds of yarn.
- (b) *Place of origin.*—Cawnpore and Bombay.
- (c) *Value.*—About Rs. 2,01,600.

Export—

- (a) *Quantity.*—About 3,300 maunds of angochas.
- (b) *Place of consignment.*—To most of the large towns of Bengal and Assam.
- (c) *Value.*—About Rs. 2,85,000.

2. Manufacture.—Household industry.

- (a) *Number of persons employed.*—Two to 3 men.

- (b) *Wages and system of payment.*—No outside men are employed on wages; the members of the family do the work themselves, and the average earning of a man is about a rupee a day.
- (c) *Total outturn.*—About 3,500 maunds of angochas.
- (d) *Marketing system.*—There are fixed customers.
- (e) *Profit.*—About 10 per cent.
- (ii) *Handloom weaving at Bahadurganj.*
1. *Raw material*—
- Import*—
- (a) *Quantity.*—About 360 maunds of yarn.
- (b) *Place of origin.*—Cawnpore and Bombay.
- (c) *Value.*—Rs. 43,200.
- Export*—
- (a) *Quantity.*—About 330 maunds of cloth.
- (b) *Place of consignment.*—To Mau and from there to other places.
- (c) *Value.*—About Rs. 68,000.
2. *Manufacture.*—Household industry.
- (a) *Number of persons employed.*—Two to 3 men.
- (b) *Wages and system of payment.*—No outside men are employed on wages; the members of the family do the work themselves, and the average earning of a man is about a rupee a day.
- (c) *Total outturn.*—About 350 maunds of cloth.
- (d) *Marketing system.*—The weavers take all the cloth to Mau where there are arhatyas or brokers who purchase it for export to other places.
- (e) *Profit.*—About 10 per cent.
- (iii) *Blanket weaving.*
1. *Raw material*—
- Import*—
- (a) *Quantity.*—About 500 maunds of wool.
- (b) *Place of origin.*—Mirzapur, Azamgarh, etc.
- (c) *Value.*—About Rs. 14,000.

Export—

- (a) *Quantity.*—About 475 maunds of blankets.
 - (b) *Place of consignment.*—To the neighbouring villages.
 - (c) *Value.*—About Rs. 26,000.
2. *Manufacture.*—Household industry.
- (a) *Number of persons employed.*—Two to 3 men.
 - (b) *Wages and system of payment.*—No outside people are employed on wages; members of the family do the work themselves, and the average earning of a man is about 8 annas a day.
 - (c) *Total outturn.*—About 475 maunds of blankets.
 - (d) *Marketing system.*—Customers come from the neighbouring villages and buy personally.
 - (e) *Profit.*—About 10 per cent.

CHAPTER V.

DIRECTORY.

1. Dealers in gold and silver, and ornaments made thereof.

1.	Raghunath Ram ...	... Zere-qila-kohna.
2.	Parshotem Kalwar	... Jhanda Tale.
3.	Isri Ram „
4.	Jaggarnath Prasad	... „
5.	Dukkhi Ram „
6.	Panna Ram „
7.	Bajrawan Dass „
8.	Raja Ram „
9.	Raghunath Ram „
10.	Bir Ram „
11.	Sheonath Dass ...	... Chowraha Baijnath.
12.	Ram Sewakram Sitaram	... „
13.	Ram Dhani „
14.	Parshotem Dass „
15.	Manni Lal „
16.	Sita Ram „
17.	Jageshwar Ram „
18.	Ladoo Ram ...	... Marwari Tola.
19.	Kheti Ram Marwari	... Raiganj.
20.	Parmeshwar Ram	... „

2. List of gold and silversmiths.

1.	Isri Ram ...	... Jhanda Tale.
2.	Panna Ram „
3.	Karia Ram „
4.	Bir Ram „
5.	Jagardeo „
6.	Ram Dass „
7.	Sita Ram „
8.	Hari Ram „
9.	Gur Prasad „
10.	Jamuna „

11.	Ram Sewak	...	...	Chowraha Baijnath.
12.	Chander	...	...	"
13.	Dasain	...	...	"
14.	Ram Deni	...	...	"
15.	Hari Narayan	...	...	"
16.	Bhairo Nath	...	...	"
17.	Jaggar Nath	...	...	Raiganj.
18.	Raghu Nath	...	...	"
19.	Banarsi	...	...	"
20.	Ram Ghulam	...	...	Nakhas.
21.	Ram Khelawan	...	...	"
22.	Buddhu Ram	...	...	"
23.	Ram Nandan	...	...	Zere-qila-kohna.
24.	Raghunath Ram	...	...	"

3. Manufacturers of clay toys.

1.	Babua	...	...	Shujawalpur.
2.	Beni	...	...	Misra Bazar.
3.	Goberdhan	...	...	"
4.	Ganesh	...	...	"
5.	Jaggernath	...	...	Amghat.
6.	Jageshwar	...	...	"

4. List of zardozi workers.

1.	Mahbub	...	...	Qazi Tola.
2.	Shakur	...	...	Nakhas.
3.	Abdul Samad	...	...	Qazi Tola.

5. List of timber merchants.

1.	Dhanpat Mallah	...	...	Steamer Ghat.
2.	Bansi Singh Chowdhari	...	...	"
3.	Ram Dass Singh	...	...	"
4.	Binaik Mallah	...	...	"
5.	Tulshi Mallah	...	...	"
6.	Kandhai Ram Mallah	...	...	"

6. List of stone merchants.

1.	Jhulai Bhar	...	...	Chitnath Ghat.
2.	Darbari Kurmi	...	...	"
3.	Dukkhi Koeri	...	...	"

7. Owners of brick kilns.

(i) Bull's trench type.

- | | | | |
|----|---------------------|-----|----------|
| 1. | Sita Ram Contractor | ... | Foxganj. |
| 2. | Ram Narayan | ... | Anhaun. |

(ii) Bangla bhatthas.

- | | | | |
|----|--------------------|-----|-------------|
| 1. | Rash Behari Chowbe | ... | Razdepur. |
| 2. | Brij Bahadur Lal | ... | " |
| 3. | Nazeer urf Najjan | ... | " |
| 4. | Gobind Lonia | ... | Bakuliapur. |
| 5. | Mangroo Bhar | ... | Lanka. |
| 6. | Gur Charan | ... | Misraulia. |
| 7. | Kunj Behari Lal | ... | " |
| 8. | Qudrat Jumman | ... | Jamlapur. |
| 9. | Daya Ram | ... | Bejaithan. |

(iii) Country pazawas.

- | | | | |
|----|-------|-----|---------------|
| 1. | Nabbu | ... | Chatri Talao. |
| 2. | Faqir | ... | Razdepur. |

(iv) Owner of B. & N.-W. Railway brickfield at Dhondha Dih.

- | | | |
|-----------------------|-----|----------|
| Ganesh Rai Contractor | ... | Phephna. |
|-----------------------|-----|----------|

8. Owners of lime kilns.

- | | | | |
|----|------------------|-----|---------------|
| 1. | Gopal Lonia | ... | Math Khaki. |
| 2. | Hanuman Lonia | ... | " |
| 3. | Ramlal Lonia | ... | " |
| 4. | Mahabir Lonia | ... | " |
| 5. | Maggu Ahir | ... | Chatri Talao. |
| 6. | Sheo Barat Lonia | ... | " |
| 7. | Madho Lonia | ... | Razdepur. |
| 8. | Gobind Lonia | ... | " |
| 9. | Sadho Lonia | ... | Barbarahna. |

9. List of manufacturers of soap.

- | | | | |
|----|------------------------|-----|--------------------------|
| 1. | Sheikh Mahbub | ... | Sabungarh Ghazipur City. |
| 2. | Sheikh Mohammed Husain | ... | Barapura, Ghazipur City. |

10. List of dealers in saji.

- | | | | |
|----|---------------------|-----|---------------------------|
| 1. | Balgobind Ramnarain | ... | Saiyedpur. |
| 2. | Rambaran Kalwar | ... | „ |
| 3. | Ganesh Kalwar | ... | „ |
| 4. | Sunder Halwai | ... | „ |
| 5. | Mohammed Siddiq | ... | Chakaulia. |
| 6. | Ramzan Barber | ... | Nandganj. |
| 7. | Daya Ram | ... | Shahipura, Ghazipur City. |

11. List of refiners of saltpetre.

- | | | | |
|----|----------------|-----|---------------------------|
| 1. | Kandhaya Lal | ... | Shahipura, Ghazipur City. |
| 2. | Ram Janam Ram | ... | Gahmar. |
| 3. | Ram Sarup Saoh | ... | Pachokhar. |
| 4. | Harbans Ram | ... | Bara. |

12. Owners of flour mills.

- | | | | H. P. of the engine. |
|----|---------------------|------------------|----------------------|
| 1. | Sulaiman Qasim | ... Macharbhatta | ... 6 |
| 2. | Mohammed Yaqub | ... Juran Shahid | ... 15 |
| 3. | Mohammed Nasiruddin | Barapura | ... 9 |
| 4. | Rajendra Nath Verma | ... Raiganj | ... 15 |
| 5. | Baij Nath Lohar | ... Misra Bazar | ... 13 |
| 6. | Lalji Sahai | ... „ | ... 12 |
| 7. | Babu Mathura Prasad | ... Paraspura | ... 12 |
| 8. | Ram Lagan Kurmi | ... Telpura | ... 12 |

13. Manufacturers of cutlery.

- | | | | |
|----|-------------------|-----|----------|
| 1. | Permeshwar Mistri | ... | Zamania. |
| 2. | Thakur Mistri | ... | „ |
| 3. | Baij Nath Lohar | ... | „ |
| 4. | Sitaram Lohar | ... | „ |

14. List of tinsmiths.

- | | | | |
|----|---------------|-----|------------------------------|
| 1. | Qudrat | ... | Lal Darwaza, Ghazipur City. |
| 2. | Mohammed Khan | ... | Satti Masjid, Ghazipur City. |
| 3. | Majid Khan | ... | Satti Masjid, Ghazipur City. |

- | | | | | |
|----|---------------|-----|-----|------------|
| 4. | Rahmatullah | ... | ... | Qazi Tola. |
| 5. | Ram Prasad | ... | ... | „ |
| 6. | Wali Mohammed | ... | ... | „ |

15. Dealers in, and exporters of, hides and skins.

- | | | |
|----|--------------------------------|----------------------------------|
| 1. | Rasul, son of Bahadur, Butcher | Qanugo Mahallah,
Zamania. |
| 2. | Farid, son of Jittu, Butcher | ... Qanugo Mahallah,
Zamania. |
| 3. | Wahid, son of Mowla, Butcher | ... Qanugo Mahallah,
Zamania. |
| 4. | Abdul Halim, son of Rahim | ... Qanugo Mahallah,
Zamania. |
| 5. | Abid, son of Ghisa, Butcher | ... Qanugo Mahallah,
Zamania. |
| 6. | Ismail, son of Hussain Buksh | ... Qanugo Mahallah,
Zamania. |
| 7. | Mohinuddin, son of Jittu | ... Qanugo Mahallah,
Zamania. |
| 8. | Jhinga, son of Hansraj, Dabgar | Qassab Tola,
Zamania. |
| 9. | Wazir, son of Dargahi | ... Qassab Tola,
Zamania. |

16. Leather tanners and manufacturers of shoes of Indian pattern.

- | | | | | | |
|-----|------------|--------|-----|-----|------------|
| 1. | Sukalu | Chamar | ... | ... | Pachokhar. |
| 2. | Saroop | „ | ... | ... | „ |
| 3. | Rambaran | „ | ... | ... | „ |
| 4. | Sheo Tahal | „ | ... | ... | „ |
| 5. | Bhagirath | „ | ... | ... | „ |
| 6. | Murat | „ | ... | ... | „ |
| 7. | Rampach | „ | ... | ... | „ |
| 8. | Sheobhag | „ | ... | ... | „ |
| 9. | Jattan | „ | ... | ... | „ |
| 10. | Ninga | „ | ... | ... | „ |
| 11. | Kurath | „ | ... | ... | „ |
| 12. | Dawar | „ | ... | ... | „ |
| 13. | Lotan | „ | ... | ... | „ |
| 14. | Ghura | „ | ... | ... | „ |

17. Manufacturers of shoes of English pattern.

- | | | |
|-------------------------|-----|--------------------------------|
| 1. Mohammed Khalil ... | ... | Lal Darwaza,
Ghazipur City. |
| 2. Mohammed Bashir ... | ... | Lal Darwaza,
Ghazipur City. |
| 3. Abdul Aziz ... | ... | Lal Darwaza,
Ghazipur City. |
| 4. Mitthu Mochi ... | ... | Lal Darwaza,
Ghazipur City. |
| 5. Hargun Mochi ... | ... | Lal Darwaza,
Ghazipur City. |
| 6. Gharbharan Mochi ... | ... | Lal Darwaza,
Ghazipur City. |

18. List of harness manufacturers.

- | | | |
|----------------------------|-----|--------------------------------|
| 1. Debi Din urf Bhagat ... | ... | Lal Darwaza,
Ghazipur City. |
| 2. Baran Chamar ... | ... | Lal Darwaza,
Ghazipur City. |

19. List of kuppi makers.

- | | | |
|---------------------------|-----|----------|
| 1. Beshashar Dabgar | ... | Telpura. |
| 2. Kandhai " ... | ... | " |
| 3. Sita " ... | ... | " |
| 4. Dadul " ... | ... | " |
| 5. Rabuan " ... | ... | " |

20. Manufacturers of fireworks.

- | | | |
|-------------------------|-----|------------------|
| 1. Musammat Amanat ... | ... | Nigahibeg. |
| 2. Musammat Sakunat ... | ... | " |
| 3. Musammat Rahmat ... | ... | Barapura. |
| 4. Chiragh Ali ... | ... | Qazi Tola. |
| 5. Majid ... | ... | Zere-qila-kohna. |
| 6. Mohammed Ali ... | ... | " |

21. Manufacturers of cocoanut huqqas.

- | | | |
|-------------------------|-----|----------------|
| 1. Gokul Teli ... | ... | Chitnath Ghat. |
| 2. Radhe Teli ... | ... | " |
| 3. Khubchand Teli ... | ... | " |
| 4. Basdeo Kasarwani ... | ... | " |

- | | | | | |
|----|------------------|-----|-----|----------------|
| 5. | Mahabir Kurmi | ... | ... | Chitnath Ghat. |
| 6. | Ram Prasad Kurmi | ... | ... | " |

22. Manufacturers of smoking tobacco.

- | | | | | |
|-----|---------------------------------------------|-----|-----|--------------|
| 1. | Hafiz Mohammed Siddiq and
Mohammed Umar. | ... | ... | Sidwara. |
| 2. | Abdul Ghafur | ... | ... | " |
| 3. | Mohammed Mustafa | ... | ... | " |
| 4. | Hafiz Noor Mohammed | ... | ... | " |
| 5. | Ram Ghulam. | ... | ... | Raiganj. |
| 6. | Ram Dass | ... | ... | " |
| 7. | Mohammed Ayub | ... | ... | Barapura. |
| 8. | Sheo Prasad | ... | ... | Urdu Bazar. |
| 9. | Pulinder Ram | ... | ... | Jhanda Tale. |
| 10. | Mahabir Prasad | ... | ... | Terhi Bazar. |
| 11. | Iddu Kunjra | ... | ... | Barbarahna. |
| 12. | Dwarika Ram | ... | ... | Katra. |
| 13. | Raja Ram | ... | ... | Markinganj |
| 14. | Hanuman Ram | ... | ... | " |

**23. Owner of the Newatia Oil and Flour Mills
and Iron Workshops.**

Messrs. Kesho Ram Ram Prasad ... Ghazipur City.

24. List of chief telis.

- | | | | | | |
|-----|--------------|------|-----|-----|---------------|
| 1. | Mahadeo | Teli | ... | ... | Urdu Bazar. |
| 2. | Mus | " | ... | ... | " |
| 3. | Dauri | " | ... | ... | " |
| 4. | Ramnarayan | " | ... | ... | " |
| 5. | Rambaran | " | ... | ... | " |
| 6. | Sahdeo | " | ... | ... | Nawabganj. |
| 7. | Bigga | " | ... | ... | " |
| 8. | Mahangoo Ram | ... | ... | ... | " |
| 9. | Sunder Ram | ... | ... | ... | " |
| 10. | Hanuman | " | ... | ... | Rui Mandvi |
| 11. | Sunder | " | ... | ... | Jhingurpatti. |
| 12. | Mangroo | " | ... | ... | " |
| 13. | Kandhya | " | ... | ... | Champia Bagh |
| 14. | Sunder | " | ... | ... | " |
| 15. | Debi Din | " | ... | ... | Nuruddinpura |

16.	Raja Ram	Teli ...	... Juran Shahid.
17.	Parshotem	„ „
18.	Bhagat	„ „
19.	Lurkhur	„ „
20.	Shankar	„ „
21.	Debi Charan	„ „
22.	Sheonandan	„ „
23.	Ghusa	„ ...	... Kapoorpur.
24.	Khunkhun	„ „
25.	Janki	„ „
26.	Mahabir	„ „
27.	Kunjan	„ ...	... Telpura.
28.	Sewak	„ „
29.	Kalli	„ „
30.	Nandhkoo	„ „
31.	Chillar	„ „
32.	Mahabir	„ „
33.	Prayag	„ „
34.	Sitaram	„ „
35.	Mahabir	„ ...	... Mianpura.

25. Manufacturers of sweetmeats (Halwais).

1.	Raghubir Prasad	...	... Lal Darwaza.
2.	Bhagwan Prasad	...	... „
3.	Basdeo Ram	...	... „
4.	Maksudan Ram	...	... Mahajantoli.
5.	Maya Ram	...	... Chowraha Baijnath.
6.	Lachman Ram	...	... „
7.	Burbe Ram	...	... „
8.	Sheo Narayan	...	... „
9.	Bhusan Ram	...	... Satti Masjid.
10.	Mahesh Ram	...	... Qazi Tola.
11.	Basant Ram	...	... „
12.	Kali Charan Ram	...	... Zere-qila-kohna.
13.	Jadunandan	...	... „
14.	Ranchhor	...	... Nakhbas.
15.	Baijnath Ram	...	... „
16.	Ram Prasad	...	... „
17.	Gobind Ram	...	... „

18.	Dip Ram	...	...	Jhanda Tale.
19.	Mahadeo Ram	...	...	"
20.	Ganesh Ram	...	...	Phatak Nawab Saheb.
21.	Sri Chand	...	...	Nawabganj.
26. Manufacturers of khowa and dealers in milk and khowa.				
1.	Damri	Ahir	...	Aunrihar.
2.	Chillar	"	...	"
3.	Nanak	"	...	"
4.	Mahadeo	"	...	"
5.	Kushar	"	...	"
6.	Mohan	"	...	Baddhupur.
7.	Ram Dass	"	...	"
8.	Manki	"	...	"
9.	Janki	"	...	"
10.	Ram Narayan	"	...	Araziganj.
11.	Khuddi	"	...	"
12.	Ganesh	"	...	Khurchana.
13.	Ganga Prasad	"	...	"
14.	Jagardeo	"	...	Ahladpur.
15.	Markande	"	...	Hathawra.
16.	Magnandan	"	...	"
17.	Lurkhur Gander	"	...	"
18.	Shukar	"	...	"
19.	Dipram	"	...	Marai.
20.	Deoki	"	...	Burhipur.
21.	Mannan	"	...	Pokhripar Bamh- raoli.
22.	Mannan	"	...	Amahta, Bamh- raoli.
23.	Laoti	"	...	Naikot.
24.	Tulshi	"	...	"
25.	Sadho	"	...	Kharauna.
26.	Jawahir	"	...	Aunrihar.
27.	Rambaran Ahir, son of Manohar	"	...	Raispur.
28.	Nandan	Ahir	...	"
29.	Mahabir	"	...	"
30.	Katwaru	"	...	"
31.	Gokul	"	...	"
32.	Bhikhari	"	...	"

33.	Buldeo	Ahir ...	... Raispur.
34.	Jaddu	„ „
35.	Ramjas	„ „
36.	Sukawan	„ „
37.	Gajadhar	„ „
38.	Banwari	„ „
39.	Balak	„ „
40.	Bandhu	„ ...	... Anaitpur.
41.	Behari	„ „
42.	Lutu	„ „
43.	Jagardeo	„ ...	... Inamipur.

27. Manufacturers of ice-creams.

1.	Mahadeo Pandey	...	... Raiganj, Ghazipur City.
2.	Mani Ram Pandey	...	... Terhi Bazar, Ghazipur City.
3.	Narayan Ahir	...	... M a c h a r h a t t a, Ghazipur City.
4.	Besheshar Kahar	...	... Pucca Ghat, Ghazipur City.
5.	Phul Chand	...	... Terhi Bazar, Ghazipur City.
6.	Budda Kahar	...	... Raiganj, Ghazipur City.

28. Manufacturers of scented oils, etc.

1	Messrs. Gulabram Dhorharam	Gola Ghat, Ghazipur City.
2.	„ Ganeshram Gurcharanram	Steamer Ghat, Ghazipur City.
3.	„ Ramcharanram Babu Nandanram.	Steamer Ghat, Ghazipur City.
4.	Thakur Gandhi	... Steamer Ghat, Ghazipur City.
5.	Raj Kumar	... Steamer Ghat, Ghazipur City.
6.	Raja Ram Agarwala	... Mahajan Tola, Ghazipur City.
7.	Munni Teli	... Raiganj, Ghazipur City.

29. Manufacturer of jars of crude glass.

Bedeshi Churihara	...	...	Rui	Mandv
				Ghazipur City

30. Manufacturers of bangles of crude glass.

1. Qurbani Churihara	...	...	Nonahra.
2. Jahangir	„	...	Subkhourapur.
3. Mohammed Ali	...	...	Sohwal.

31. List of yarn dealers.

1. Hari Munib, Kothi Mau	...	Marwari Tola.
2. Ladoo Ram Marwari	...	Macharhatta.

32. List of dealers in and exporters of angochas.

1. Ladoo Ram Marwari	...	Macharhatta.
2. Mumtaz Ahmed urf Munshi	...	„
3. Sheikh Hashim	...	„
4. Shukurullah	...	„
5. Sheikh Iddu	...	Zere-qila-kohna.
6. Abdul Aziz Abdul Samad	...	Nakhas.
7. Hafiz Nabi Buksh	...	Juran Shahid.
8. Hafiz Abdul Karim	...	„

33. List of handloom weavers.

1. Abdul Ghani	...	Barapura	...	Ghazipur City.
2. Rasul Buksh	...	„	„	„
3. Rahmatullah	...	„	„	„
4. Hashmat Ali	...	„	„	„
5. Abdul Hamid	...	„	„	„
6. Amanatullah	...	„	„	„
7. Fateh Mohammed...	...	„	„	„
8. Mohammed Ishaq...	...	„	„	„
9. Hafiz Ilias	...	Champia Bagh	„	„
10. Abdul Ghafoor	...	„	„	„
11. Noor Mohammed...	...	„	„	„
12. Abdullah	...	„	„	„
13. Rajjab Ali	...	„	„	„
14. Sheikh Mukarim	...	Juran Shahid	„	„
15. Ishaq	...	„	„	„
16. Subhan	...	„	„	„

17.	Abdul Karim	...	Juran	Shahid Ghazipur City.
18.	Barkatullah	...	"	"
19.	Wajid Ali	...	"	"
20.	Ahmed Hussain	...	"	"
21.	Hashmatullah	...	"	"
22.	Abdul Ghafoor	...	Nuruddinpara	"
23.	Abdul Samad	...	"	"
24.	Abdul Hamid	...	"	"
25.	Mohammed Siddiq	...	"	"
26.	Sher Ali	...	"	"
27.	Sheikh Babu	...	Shujawalpur	"
28.	Rahmat Ali	...	"	"
29.	Faqir Mohammed...	...	"	"
30.	Ahmed Hussain	...	Mustafabad	"
31.	Hasan Ali	...	"	"
32.	Bahadur	...	"	"
33.	Rahmat Ali	...	"	"
34.	Supan	...	Razdepur	"
35.	Rahmat Ali	...	"	"
36.	Din Ali	...	"	"
37.	Qammeruddin	...	Kapoorpur	"
38.	Bechu	...	"	"
39.	Shahadat	...	"	"
40.	Noor Ali	...	Mianpura	"
41.	Kariman	...	"	"
42.	Hafiz Abdul Sattar	...	Sheikh Ziauddin	"
43.	Muddi	...	"	"
44.	Rafiq	...	Moghalpura	"
45.	Razzaq	...	"	"
46.	Musaddi	...	Barbarahna	"
47.	Habib	...	"	"
48.	Siddiq	...	"	"
49.	Ramzan	...	"	"
50.	Rafiq	...	"	"
51.	Ghafoor	...	Kathwalia	"
52.	Mohammed	...	"	"
53.	Hasan Ali	...	Bakshupur.	"
54.	Abdul Hamid	...	"	"

55.	Sanaullah	...	Sheikhpura.	
56.	Mohammed Siddiq...		..	
57.	Abdul Majid	...	..
58.	Sayeed	...	..
59.	Jhagroo Mian	...	Junedpur	... Zamania.
60.	Mohammed Shakur		..	..
61.	Nasiban	...	Sarjama Shahid	..
62.	Kariman Mian	...	Kot	..
63.	Gharbul	...	Lodipura	..
64.	Qudrat	...	Chautari	..
65.	Rahmatullah	...	Masjid Sardar Khan.	..
66.	Abdul Rahim	...	..	..
67.	Abdul Hakim	...	..	..
68.	Abdul Hamid	...	..	..
69.	Sharfuddin	...	..	..
70.	Munif	...	..	..
71.	Abdul Haq	...	Muddhipur	..
72.	Diltu	...	Chiktola	..
73.	Sahebodin	...	..	..
74.	Barkat	...	Gurwan	... Zamania.
75.	Dargahi	...	..	..
76.	Fazal Haq	...	Bichla	... Gahmar.
77.	Abdul Latif	...	..	..
78.	Fouadar	...	..	..
79.	Abdul Razzaq	...	..	..
80.	Yusuf	...	Dakhin	..
81.	Saliman	...	..	..
82.	Basi	...	..	..
83.	Yaqub	...	..	..
84.	Majida	...	..	..
85.	Bakshu	...	..	..
86.	Dullah	...	Uttar	..
87.	Neur	...	Pachim	..
88.	Chamru	...	..	..
89.	Abid	...	..	..
90.	Wali Mohammed	...	Puranganj	... Bahadurganj.
91.	Salimullah	...	..	..
92.	Wahid	...	..	..

93.	Elahi	...	Puraniganj	...	Bahadurganj.
94.	Jian	...	"		"
95.	Momin	...	"		"
96.	Mowla Buksh	...	"		"
97.	Taj Mohammed	...	"		"
98.	Mohammed Ali	...	"		"
99.	Akbar Dalal	...	Abdulpur		"
100.	Hafiz Abdul Aziz	...	"		"
101.	Hafiz Ishaq	...	"		"
102.	Abdul Hamid	...	"		"
103.	Abdul Sattar	...	"		"
104.	Hidayatullah	...	"		"
105.	Yaqub	...	"		"
106.	Salimullah	...	"		"
107.	Qasim	...	"		"
108.	Ghaffar	...	"		"
109.	Abdul Latif	...	Muhammadabad.		
110.	Hafiz Mowla Buksh	...	"		
111.	Niamatullah	...	"		
112.	Ismail	...	"		
113.	Udai	...	"		
114.	Ali Husain	...	"		
115.	Billar	...	"		
116.	Sobrati	...	"		
117.	Buddhu	...	"		
118.	Hussain Buksh	...	"		
119.	Qasim Ali	...	"		
120.	Yusuf	...	"		
121.	Nabi	...	"		
122.	Zamir	...	"		
123.	Qadir Mian	...	Parsa	...	Muhammadabad.
124.	Sastu Mian	...	"		"
125.	Ghisiawan Mian	...	"		"
126.	Mukarim Mian	...	"		"
127.	Sobbat Mian	...	"		"
128.	Ramzan Mian	...	"		"
129.	Qasim Mian	...	"		"
130.	Darbar Mian	...	"		"
131.	Inrau Ali Mian	...	"		"
132.	Mangran Mian	...	"		"

-
- | | | | |
|------|--------------|-----|-----------------------|
| 133. | Sheikh Ghura | ... | Saiyedpur. |
| 134. | Sheikh Jittu | ... | " |
| 135. | Sheikh Jiasu | ... | Chakia ... Saiyedpur. |
| 136. | Pir Buksh | ... | Rajapur " |

34. List of dyers and chhipis.

- | | | | |
|----|-------------------|-----|------------------------------|
| 1. | Abdul Ghafur | ... | Mahajantoli... Ghazipur City |
| 2. | Katulli | ... | Macharhatta " |
| 3. | Pheku | ... | " " |
| 4. | Dost Mohammed | ... | Lal Durwaza " |
| 5. | Musammat Shakunti | ... | Bahadurganj " |
| 6. | Wife of Ghafur | ... | " |
| 7. | Zainul | ... | " |

35. Ornamenters of bangles.

- | | | | |
|----|------------------|-----|-------------------|
| 1. | Bandhu Churihara | ... | Satti Masjid. |
| 2. | Lal Mohammed | ... | Katra. |
| 3. | Ghafoor | ... | Chowraha Baijnath |
| 4. | Mangroo | ... | Sheikh Jadi Pir. |
| 5. | Bedeshi | ... | Rui Mandvi. |
| 6. | Ghunny | ... | Champia Bagh. |
| 7. | Shakur | ... | " |
| 8. | Karimullah | ... | Chitnath. |

CHAPTER VI.

MISCELLANEOUS.

1. **Tariff schedule for chief articles of import.**

Names of articles.	Duty.
1. Grain and pulse ...	2½ per cent.
2. Provisions and oilman stores.	11 „
3. Salt ...	Free.
4. Cigars and cigarettes ...	75 per cent.
5. Petroleum ...	Re. 0-1-6 per gallon.
6. Wood and timber ...	11 per cent.
7. Motor cars, cycles, etc.	20 „
8. Chemicals and drugs ...	11 „
9. Cutlery ...	11 „
10. Musical instruments ...	20 „
11. Aniline dyes ...	11 „
12. Glass and glass ware ...	11 „
13. Machinery ...	2½ „
14. Iron and steel ...	2½ „
15. Paper ...	11 „
16. Cotton piece-goods ...	11 „
17. Matches ...	Re. 0-12-0 per gross boxes.

2. **Railway rates.**

The following are the maximum and minimum class rates in force from 1st April, 1922 :—

Class.	Maximum pie per maund per mile.	Minimum pie per maund per mile.
1st38	.100
2nd ...	.42
3rd58	.166
4th ...	.62
5th ...	.77
6th ...	.83
7th ...	.96
8th ...	1.04	
9th ...	1.25	
10th ...	1.37	

General classification of chief articles of exports and imports

Commodity.	R.R.	O.I
1. Grain and pulse	1	...
2. Preserves	6	4
3. Sugar	2	...
4. Salt	4	...
5. Cigars and cigarettes	6	...
6. Kerosine oil	4	2
7. Wood and timber	1	...
8. Motor cars, cycles, etc.	8	6
9. Chemicals	8	...
10. Drugs	4	...
11. Musical instruments	9	...
12. Cutlery	6	...
13. Glass (plates, etc.)	8	...
14. Glass (chimneys, inkpots, etc.)	6	4
15. Glass (mirrors)	9	...
16. Glass (broken)	1	...
17. Dyes (aniline and others)	6	4
18. Machinery	4	2
19. Iron and steel	2	...
20. Paper (bales or bundles)	2	...
21. Paper (in cases)	4	...
22. Cotton (pressed)	4	...
23. Cotton piece-goods (bales)	6	4
24. Cotton (loose)	8	...
25. Cotton piece-goods (not press packed)	8	6
26. Matches	9	8
27. Bell-metal and bell-metal wares	6	...
28. Bell-metal and brass (scrap)	2	...
29. Brass vessels and cooking utensils	4	...
30. Flour or ata	2	...
31. Coal, coke and patent fuel	1	...
32. Scented water	9	...
33. Vegetable oils	4	2
34. Soap	2	...
35. Indigo	4	...
36. Sann hemp	2	...
37. Hides and skins	4	...

Commodity.	R.R.	O.R.
38. Oil-cake	1	...
39. Saltpetre	2	...
40. Sajji	3	2
41. Sandalwood oil	9	...
42. Country tobacco (manufactured)	6	4
43. Country tobacco (unmanufactured)	4	...

N.B.—R.R. indicates railway risk and O.R. indicates owner's risk.

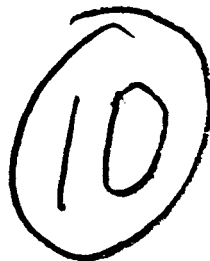
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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Gonda District

By
H. N. SAPRU, B.A.



ALLAHABAD:

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CONTENTS.

CHAPTER I—

	<i>Page.</i>
1. Boundaries	1
2. Physical features	<i>ib.</i>
3. Rivers	<i>ib.</i>
4. Lakes and jhils	<i>ib.</i>
5. Railways	2
6. Ferries	<i>ib.</i>
7. Roads	3
8. Markets	<i>ib.</i>
9. Fairs	5
10. Population	6
11. Outward trade	<i>ib.</i>
12. Nepal trade	<i>ib.</i>
13. Communication	7
14. Forests	<i>ib.</i>
15. Groves	9
16. Cattle census	10
17. Exhibition	<i>ib.</i>
18. Sugarcane factories	<i>ib.</i>

CHAPTER II—

1. Art industry (kasgar's painting)	11
2. Building materials—	
(i) Bricks	12
(ii) Tiles	13
(iii) Lime	<i>ib.</i>
3. Chemicals	<i>ib.</i>
4. Food grains	14
5. Hardware—	
(i) Phul and kaskut utensils	15
(ii) Cutlery	16
6. Oil	17
7. Miscellaneous—	
(i) Fishing	19
(ii) Jail industries	<i>ib.</i>

	<i>Page.</i>
(iii) Ornamental cane boxes (pitaras) ...	21
(iv) Painted tar fans ...	22
(v) Naicha manufacture ...	ib.
8. Textiles (cloth printing) ...	23
CHAPTER III—	
1. Oilseed crushing ...	25
2. Sugar manufacture ...	ib.
3. Timber sawing and wood working ...	ib.
4. Sword-sticks ...	26
5. Fruit and vegetables ...	ib.
CHAPTER IV—Statistics—	
1. Art pottery ...	27
2. Building materials ...	ib.
3. Food grains ...	28
4. Hardware ...	29
5. Miscellaneous ...	30
6. Oil ...	31
7. Textiles ...	ib.
CHAPTER V—Directory—	
1. Pottery makers ...	33
2. Brick kiln owners ...	ib.
3. Tile manufacturers ...	ib.
4. Lime mills ...	ib.
5. Flour mills ...	ib.
6. Grain exporters ...	34
7. Sugar factories ...	ib.
8. Phul and brass utensil makers ...	35
9. Sword-stick makers ...	ib.
10. Hide and skin exporters ...	ib.
11. Bone exporters ...	ib.
12. Flower-painted cane basket makers ...	ib.
13. Artistic tar fan makers ...	36
14. Artistic naicha makers ...	ib.
15. Oil manufacturers ...	ib.
16. Cloth-printing factory owners ...	ib.
17. Block makers ...	ib.
18. Forest contractors ...	37
BIBLIOGRAPHY ...	ib.

CHAPTER I.

INTRODUCTION.

1. Boundaries.

North—Nepal State.

South—Fyzabad and Bara Banki districts.

East—Basti district.

West—Bharaich district.

2. Physical features.

(1) North is the tarai, comprising Tulsipur, greater part of Balrampur and the northern edge of Utraula pargana. This portion of the district is malarious to a large extent and hence it is very unhealthy.

(2) Central upland plain or uparhar embraces the remainder of Utraula tahsil, the large pargana of Gonda and portions of Mahadewa and Nawabganj.

(3) The moist area or tarai comprises Tarabganj tahsil and Paharpur pargana. The whole is covered with a network of small streams and in wet years it is liable to inundation.

3. Rivers.

The rivers of some importance are the Ghagra, the Rapti, the Burhi Rapti, the Suwawan, the Kuwawan, the Bisuhi, the Manwar, the Terhi, the Sarju, and the hill torrents of Tulsipur. Of these the most important is the Ghagra which is the name given to the united waters of the Kauriala, the Sarju and the Chowka.

4. Lakes and Jhils.

Sohela Tal, Parbati, Argha Tal, and several others round Khargupur and in Nawabganj and Mahadewa pargana are most important. They are used as reservoirs for irrigation, and are of considerable value as fisheries. Waternuts (singhara) are grown very extensively. Wild rice, which is frequently found in abundance, forms a supplement to the food supply of the poorest class.

5. Railways.

Bengal and North-Western Railway.

Railways.	Length. Miles.	Stations.
Katihar—Cawnpore.	67	Gograghat, Jarwal Road, Sarju, Colonelganj, Maijapur, Gonda Kachehri, Gonda, Bidya-Nagar. Mankapur, Maskunwan, Swami Narain Chapia, Babhnan.
Gorakhpur—Gonda.	67	Gonda, Itiathok, Balrampur, Kawapur, Tulsipur, Gainsari, Pachperwa, Barhni.
Mankapur—Ajodhia.	19	Mankapur, Tikri, Nawabganj, ghat. Ajodhiaghat (Lakarmandi).
Jarwa—Gainsari.	10	Jarwa, Gainsari.

6. List of important ferries.

River.	Ferry.	Village.	Pargana.
Ghagra	.. Sardhana	... Bargadia	... Guwarich.
"	... Lohri Mau	... Muhammadpur Gurwar.	"
"	.. Dhanauli	... Paska	"
"	... Kamiar	... Bhawanmadar Manjha.	"
"	... Koelawar	... Sunauli	"
"	... Sihori	... Paras	... Digsir.
"	... Dhemua	... Beonda	"
"	... Miranghat	... Jaitpur	... Nawabganj.
"	... Ajodhia	.. Lakarmandi	"
Sarju	... Katra	... Katra Shahbazpur.	... Guwarich.
Tehri	... Balpur	... Balpur	... Paharpur.
"	... Durjanpur	... Durjanpur	... Nawabganj.
Rapti	... Mathura Chuka	Mathura	... Balrampur.
"	... Kondri	... Kondri	"
"	... Bela	... Bela	"
"	... Sisai	... Sisai	"
"	... Karmahnan	... Nandmahra	... Utraula.
"	... Pipra	... Pipra	"
"	... Materia	... Materia	"

Besides these, there are numerous private ferries all over the district.

7. List of important roads.

I class metalled roads—

	Length. Miles.
Gonda to Fyzabad	24
„ „ Balrampur	21
„ „ Utraula	15
„ „ Bahraich	1½
„ „ Bahramghat	2
„ Station Road	½
Kachehri Station Road	1½
Civil Station Circular Road	2½
Nawabganj to Lakarmandi	5
Nawabganj to Colonelgunj	1
Nawabganj to Mankapur	3
Mankapur to Utraula	24

Unmetalled roads—

Gonda to Bilsar	11½
Itiathok to Khargupur	6½
Utraula to Pachperwa	22
Utraula to Tulsipur	15
Balrampur to Bahraich	9½
Colonelgunj to Bahraich	7
Balrampur to Tulsipur	14
Balrampur to Utraula	17
Bilsar to Begamganj	5
Tulsipur to Pachperwa	14

8. List of important markets.

Gonda	Gonda	Daily.
Do.	Rhurasia	Do.
Do.	Sultanjot	Do.
Do.	Jignan	Do.
Do.	Bargaon	Do.
Do.	Parade (Forbes- ganj)	Do.
Do.	Pendaran (Rajgarh)	Do.
Do.	Rctwagara	Tuesday and Satur- day.
Do.	Dhanepur	Daily.
Do.	Ayah	Do.

Gonda	...	Itiathok	...	Daily.
Do.	...	Khargupur	...	Do.
Do.	...	Bishanpur	Bel-	
		bharia	...	Do.
Do.	...	Jankinagar (Maha-	...	Do.
		rajanj)	...	Do.
Do.	...	Kauria	...	Do.
Do.	...	Mahnon	...	Do.
Do.	...	Dubha	...	Do.
Paharpur	...	Birpur (Katra)	...	Do.
Do.	...	Palpur Hazari	...	Sunday and Wednes-
				day.
Digsir	...	Dhondepur	...	Daily.
Do.	...	Paras	...	Monday and Friday
Do.	...	Parsada	...	Ditto.
Do.	...	Umri Beganganj	...	Tuesday and Satur-
				day.
Do.	...	Xindhaura	...	Ditto.
Do.	...	Adampur	...	Ditto.
Do.	...	Tengraha (Rampu)	...	Sunday and Thurs-
				day.
Guwarich	...	Colonelgunj	...	Daily.
Do.	...	Bhauriganj	...	Do.
Do.	...	Paska	...	Wednesday and
				Saturday.
Do.	...	Mangura	...	Ditto.
Do.	...	Fatehpur (Pahlad-	...	Sunday and Wednes-
		ganj)	...	day.
Do.	...	Barauli	...	Sunday and Thurs-
				day.
Do.	...	Shahpur	...	Ditto.
Do.	...	Paraspur	...	Monday and Friday.
Mahadewa	...	Chaubepur	...	Ditto.
Do.	...	Wazirganj	...	Daily.
Do.	...	Mirzapur	...	Do.
Do.	...	Kadipur	...	Sunday and Thurs-
				day.
Do.	...	Baunriha	...	Tuesday and Satur-
				day.
Nawabganj	...	Nawabganj	...	Daily.
Do.	...	Tulsipur (Ramesh-	...	Monday and Friday.
		warganj)	...	
Utraula	...	Utraula	...	Daily.

Mankapur	...	Mankapur (Raniganj)	...	Daily.
Do.	...	Machhigaon	...	Do.
Do.	...	Harmatair	...	Do.
Do.	...	Bidia Nagar	...	Do.
Do.	...	Bhitaura Musaganj	...	Tuesday and Friday.
Do.	...	Maskinwan (Maharajganj)	...	Ditto.
Sadullahnagar	...	Sadullahnagar	...	Ditto.
Do.	...	Rehra	...	Ditto.
Babhnipair	...	Chhapia	...	Sunday and Thursday.
Do.	...	Bhitia	...	Ditto.
Do.	...	Mahuli Khori (Bhagwanganj)	...	Ditto.
Do.	...	Saberpur	...	Ditto.
Burhapara	...	Sahiapur	...	Daily.
Do.	...	Gharighat	...	Do.
Balrampur	...	Balrampur	...	Do.
Do.	...	Shankar Nagar	...	Do.
Do.	...	Mathura Bazar	...	Do.
Do.	...	Sheopura	...	Do.
Do.	...	Baldeo Nagar	...	Do.
Do.	...	Niwazpur (Kawapur)	...	Do.
Do.	...	Gulariha	...	Do.
Do.	...	Bishnipur (Bhagwaliganj)	...	Do.
Do.	...	Maharajganj	...	Do.
Do.	...	Ratanpur (Bahadurganj)	...	Do.
Tulsipur	...	Tulsipur	...	Do.

9 List of important fairs of the district.

Pargana.	Village.	Name of fair.	Date.
Gonda	...	Tirra Manorana.	Tirra Manorana. Kartik Purnamashi.
Do.	...	Ram Nagar	Bishramghat. Kartik Purnamashi.
Do.	...	Katauli	Anjawalpuri. Kartik Sudi 2nd.
Do.	...	Khaira	Khaira Bha-wani. Jeth Sudi Ist.

Pargana	Village.	Name of fair.	Date.
Gonda ...	Janki Nagar	Dukh-laran Nath	Phagun Badi 14th.
Pahrapur ...	Mahadewa ...	Barkhandi Nath.	Phagun Badi 14th.
Ditto ...	Balpur ...	Siddbhir ...	Asarh Pura-mashi.
Guwarich ...	Paska ...	Sangam Ashnan.	Pus Pura-mashi.
Ditto ...	Sakraura ...	Nawabghat	Pus Pura-mashi.
Nawabganj ...	Maheshpur ...	Manjha' Maheshpur.	Kartik Pura-mashi and Chait Sudi 9th.
Mahadewa ...	Asokpur ...	Rauza ...	First Sunday in Jeth
Ditto ...	Bhat Bhawani	Balesharnath	Bhagun Badi 14th.
Mankapur ..	Karauhan ...	Karauhannath	Bhagun Badi 14th.
Balrampur ...	Bijlipur ..	Bijlipur Bhawani.	Asarh Pura-mashi.
Tulsipur ...	Patan ...	Debi Patan.	Chait Sudi 1st to 9th.

10. Population.

The population of the district in 1921 was 1,473,098.

11. Outward trade.

The trade in the agricultural and forest produce of the district is of some importance. The famous rice of Tulsipur pargana commands a high price in the markets of Upper India. Wheat and hides are other valuable products and to these may be added timber, fuel, bankas and baib grass from the forests, dried fish, oilseeds and other grains.

12. Nepal trade.

There are nine difficult passes (out of which only two—Jarwa and Nandmahra—are accessible to ponies) through which the trade finds its way over the hill frontier. They are

Bhusahar, Jarwa, Baisimatha, Bach Kahwa, Kamri, Nand-mahra, Bhaishi, Barhawa and Khangra. The chief Nepalese bazar along this line is Deokhar. Traffic is registered at two posts, Tulsipur and Mohkampur, near Jarwa. The imports from Nepal are fibrous articles and oilseeds, besides food grains (mainly rice and wheat), drugs, such as bhang, ganja and charas, spices and ghee. The exports to Nepal are mostly salt in addition to piece goods, sugar, tobacco, kerosine oil, vegetables, fruits and dried fish, highly prized by the hill men, who rate it according to the strength of its flavour.

13. Communication.

There is need of a "forward policy" in the matter of pacca roads. Gonda and Bara Banki should be linked first of all and then a pacca road should run all through from Gonda to Bahraich and Nepalganj. A permanent pacca bridge is also required at Lakarmandi to facilitate all communications between the northern districts and the southern. If the Bengal and North-Western Railway extends its line from Lakarmandi to Fyzabad and then passes through Sultanpur district, joining with Allahabad city, the trans-Ghagra districts will be open to the southern districts for all trade purposes.

14. Forests.

There are two reserved forests—the first comprising long narrow strip in the extreme north situate in Tulsipur pargana and the second the small detached block known as Tikri forest to the south of Mankapur. Besides these, large areas of private forest land are in the possession of the taluqdars and zamindars of the district.

Once a year an auction is held in the Government forests in the month of August according to the system of "lump sum sales." Auction money up to Rs. 200 is collected at once, over Rs. 200 but not exceeding Rs. 500 in two instalments, over Rs. 500 in three instalments. In each case 20 per cent. security is taken at once, but half of it is remitted as soon as the work in the jungles is started.

From 3 to 4 lakh cubic feet of timber is sold by the Forest department each year. It is exported to other districts

in this province and in other provinces also. Last year the following timbers were exported :—

(1) Sal	...	...	133,848 cubic feet.
(2) Asna	...	...	47,759 "
(3) Haldu	...	...	2,347 "
(4) Shisham	...	...	14,642 "
(5) Dhau	...	...	18,912 "
(6) Kanju	...	...	10,000 "
(7) Miscellaneous	...	...	96,192 "

The last item contains valuable trees, like Jigna, Mohwá, Khair, Jamun and Semal. It is estimated that in future years the quantity of the wood and timber to be sold would be doubled, especially first, third and the seventh. Haldu and Kanju are said to be exported to Bareilly Factory for making bobbins, tool handles and other things. Transport charges to nearest railway station are 2 annas per cubic foot for distances 5 to 10 miles, and 3 annas to 4 annas up to 20 miles.

The whole revenue comes from three sources :—

- (1) Timber about $3\frac{3}{4}$ lakh cubic feet.
- (2) Fuel over $3\frac{3}{4}$ lakh cubic feet.
- (3) Minor produce and grazing fees.

The first values about Rs. 64,000 and the second Rs. 44,000. The third yields about Rs. 14,000. This minor produce consists mostly of thatching grass, Baib grass and Mohwa fruits.

Catechu is nearly exhausted and the remaining trees are said to be of very small size, to be of any industrial value. About 39,000 maunds of Baib grass valued at about Rs. 5,000 is exported to Messrs. Heilgers & Company, Calcutta, through their agent Misra who lives in village Janakpur—6 miles from Tulsipur. The company holds a lease for Gonda and Bahraich forests for six years, which expires on the 30th of June, 1928. The payment of the total amount, Rs. 61,506, is to be made by yearly instalments of Rs. 9,251 for three years and Rs. 11,251 for the next three years.

Grazing.—About 35,000 acres of land, mostly in the southern portion of the forest belt, is open for grazing purposes. It is generally allowed to privileged villages of the neighbourhood which are given concession rates. At present 18,600 cattle are allowed to graze and the charges are 2 annas per cow and

4 annas for a buffalo. It is expected that under the new working plan these rates will be increased.

Thatching grass 55,557 maunds worth Rs. 6,401 was sold to the local people. *Mohwa flowers and fruits*—200 maunds valued at Rs. 1,785 were sold to contractors in 1922-23, but this is said to be a fabulous price, in future it would bring Rs. 600 only.

Lime stone (Kankar) 3,140 maunds, worth Rs. 291 was sold to small local contractors.

The Forest department has worked out a plan for future regeneration. Under the new system, land will be given free from any rent for four years with the proviso that the tenants should put in seeds of valuable timber in lines. The seeds will be supplied free of any cost by the Forest department. The tenants will get further facilities such as wood for plough, for fencing and for making huts. The contractors will also be allowed to take land and they might engage labour for tilling the land and for sowing seeds of timber—the latter on behalf of the Government.

The best place for establishing a saw mill is said to be Chandarpur—10 miles away from Pachperwa railway station which is joined by a kachha road. The neighbouring forest region will supply about one lakh cubic feet of Sal and Asna timber each year. This will be available for about thirty years.

Private Forests.—Balrampur and Mankapur estates have considerable area under their ownership. These private jungles provide fuel and fodder reserves and yield a large revenue in the shape of grazing dues. The best timber they produce is Sal which is disposed of in the local markets. The forests contain a large number of Mohwa trees as well, the flowers and fruits of which are said to be most paying to the landowners. The total area of private forests is 92,771.47 acres; in Gonda tahsil 5,181 acres, in Tarabganj tahsil 4,512.47 acres and in Utraula tahsil 83,078 acres.

15. Groves.

Mohwa is the most valuable trees in the east of the district. Mankapur estate is said to possess 5,000 Mohwa trees, and the Forest department has some 1,200 trees. The production is estimated to be over 21,000 maunds annually.

16. Cattle census of Gonda district (year 1920.)

Bulls	...	...	...	...	1,347
Bullocks	...	...	...	...	448,507
Cows	...	...	...	...	328,192
Buffaloes	...	...	...	...	12,960
Cow-buffaloes	...	...	...	...	125,136
Sheep	...	...	...	...	61,602
Goats	...	...	...	...	125,353

17. Exhibition.

An exhibition is held in the district at Patan during the Debi Patan Fair, where all the industries of the district are represented, though the fair is generally famous for the sale of horses and other cattle.

18. Sugarcane factories.

There are two sugarcane factories working on a small scale at Maskanwa Bazar (Utraula) and Itai Rampur (Utraula). They are worked with engines and small machinery and are said to be quite successful. Advances are given to tenants for growing cane and when the crop is ready, it is cut and delivered to factory owners. The system has been working very well. No attempt was made to go into the question of sugar factories or sugar manufacture on idigenous system as a separate Commission has recently dealt with the question on an all-India basis.

CHAPTER II.

DESCRIPTION OF, AND SUGGESTIONS FOR THE IMPROVEMENT OF VARIOUS INDUSTRIES OF THE DISTRICT.

1. Art industry.

Kasgar's painting (Utraula Pottery).—The kasgars of Utraula paint flowers and leaves on flower pots and flower vases. Formerly the kasgars use to make heavy and big articles, such as "martbans," but they have been given up as the demand for them ceased. The pottery has been long famous and is said to have earned recognition at several exhibitions. It is delicate in make but beautiful in design. As these kasgars are the same who manufacture cane pitaras, their flower designs are also quite similar. The pottery is made to order at present as there is not much demand for it. The lack of demand is due to four reasons—(1) that the pottery is liable to break easily in transport, (2) that no attempt was ever made to push it in the market, (3) that the articles at present made are fit for drawing rooms only and hence only well-to-do people purchase them, (4) that there are only two men who make them and they are mostly engaged in making cane pitaras—the demand for which is comparatively greater. Flower pots made at present are sold at 8 annas to 12 annas each and flower vases at 5 annas to 6 annas each.

The kasgars purchase ready-made articles from ordinary local potters at Rs. 6 to Rs 7 per hundred. About 100 pots and vases are made annually. Among the colours hartal, indigo, safeda and Gujrati sindur are used. They are bought from local banias at Rs. 2-8 a seer, 8 annas a tola, Re. 1-4 a seer and Re. 1 a seer, respectively; all of these are imported in the district from Cawnpore. The annual total consumption weighs about 14 to 15 seers, worth Rs. 20.

There are only two persons engaged in this industry who earn thereby 6 annas per head per day by making one flower pot or two flower vases in one day. But as the work does not continue from day to day, this income can hardly be Rs. 38 per head annually. The total outturn is 100 pots and vases, which are mostly presented by the residents to their friends and relatives. The industry can be extended if (1) arrangements could be made for good packing, (2) the articles are pushed into market by means of agencies, (3) other articles of daily use are also made and (4) production is increased by training apprentices. New designs may also be introduced but these should be suggested by a person having some originality and artistic taste, for example the Lucknow Emporium could take up the work easily.

2. Building materials.

(i) Bricks.

There are 14 brick kilns working in the district, seven near Gonda city and seven near Balrampur town. Land is to be had for brick-making on royalty system—Rs. 50 for a lakh of bricks. The work lasts for eight to nine months during which time there are four to six charges of 3 lakh bricks each, producing about 15 lakhs in all in one kiln. There are 10 skilled labourers consisting of mistri, moulders, bakers and others, at each firm, the total is 150 men. Besides the above temporary unskilled labour is engaged for arranging and transporting the baked and unbaked products. Mistri is paid Rs. 25 to Rs. 30 a month, moulders get Re. 1-8 to Re. 1-12 per 1,000 bricks and are said to produce 1,000 bricks a day. The latter are engaged only when the moulding of bricks goes on, the rest of the time they generally sit idle. Advances are given to them for their subsistence and the accounts are settled at the end of the year, when they are said to save Rs. 100 or so. Other skilled labourers are given Rs. 15 per month per head. The unskilled labourer works for about three hours a day. The contract wages for transporting bricks is 2 cowries per brick, but they are said to reach 6 annas a day per head. The total outturn of bricks in the district is estimated to be 210 lakhs. Bricks are sold to local people at the following rates :—

- I class at Rs. 15 to Rs. 16 per 1,000.
- II „ „ Rs. 13-8 per 1,000.
- III „ „ Rs. 11-8 per 1,000.

The cartage, however, has to be paid by the purchaser at the rate Rs. 2 to Rs. 2-8 per cartful of 250 bricks.

(ii) *Tiles.*

There are 20 kumhars living in the suburbs of Gonda who make tiles and supply them to the city. A royalty of 1 anna to 4 annas per thousand is charged by the land-owners. They get only a living wage about 3 annas to 4 annas per day and are addicted to drinking. Most of them are said to be under debt. They also make gharas, etc., for daily use. Each man is said to make 200 tiles a day. There does not seem to be much demand for them as tiled roofs are being replaced by pucca buildings. Large tiles are sold at Rs. 18 per thousand and small at Rs. 3-8 to Rs. 4 with cartage. Khapra and naria are given half and half to purchasers.

(iii) *Lime.*

There are four lime mills—two are worked with the engines attached to flour mills and two are worked with 18 H. P. engines as independent concerns. Kankar is scarce and can be had locally at Rs. 6 per 100 cubic feet. Royalty is paid at 4 annas to 6 annas per 100 cubic feet. The labour engaged are—engine drivers, machine men, firemen and watermen—they are all 10 men. Besides these there are 25 men unskilled. Mistri gets Rs. 40 per month, fireman Rs. 12 to Rs. 15, waterman Rs. 10 to Rs. 12, machine man Rs. 10 to Rs. 12, and coolies, etc., 4 annas to 7 annas per head per day. The total outturn is estimated to be 81,000 cubic feet. The prices of lime are Rs. 25 per 100 cubic feet ex-godown and Rs. 28 including cartage and octroi duty. The octroi duty is 12 annas per 100 cubic feet and cartage Re. 1-8 to Rs. 2-8 per 100 cubic feet.

3. Chemicals.

There are some 23 acres of land under reh mostly in Utraula. There are only 12 workers in the Gonda tahsil who possess 6 acres of land having nitrous earth and 31 in Tarabganj tahsil with 3 acres of land. The workers are quite scattered in villages and their product is almost negligible.

4. Food grains.

(i) Statement of important crops and their approximate production in the district.

Crops.	Acreage.	Average produc-	Total approxi-
		tion per acre.	mate production.
	Acres.	Maunds.	Maunds.
Juar ...	484	12	5,803
Bajra ...	757	10	7,570
Juar and arhar ...	6,137	5 (arhar)	30,685
Bajra and arhar ...	817	5 "	4,085
Early rice ...	312,968	20	6,259,360
Late rice ...	232,902	20	4,658,040
Maize ...	200,685	12	2,408,220
Arhar ...	5,577	11	61,347
Urd and mung ...	10,644	2 (mung)	21,288
Sugarcane ...	23,000	75	1,725,000
Til ...	1,830	6	10,980
Groundnuts ...	56	18	1,008
Sanai ...	250	5 (fibre)	1,250
Wheat ...	236,275	15	3,544,125
Wheat and gram ...	24,935	7 (wheat)	174,545
Wheat and barley ...	31,328	7 "	219,296
Barley ...	31,393	15	470,895
Barley and gram ...	60,801	7 (barley)	425,607
Gram ...	147,820	12	1,773,840
Peas ...	142,696	6	856,176
Potatoes ...	2,604	150	390,600
Opium ...	9,479	9 seers juice	85,311
Tobacco ...	651	12	7,812
Linseed ...	35,068	5	175,340
Rape and mustard ...	15,291	6	91,746

(ii) *Wheat Grinding*.—There are four flour mills, out of which two have given up wheat grinding and have taken to manufacture of lime. The two mills still working have combined flour milling with lime—one has a 10 H. P. engine and the other 25 H. P. They have engaged eight skilled labourers and 25 unskilled. The driver is paid Rs. 40 per month, others get Rs. 10 to Rs. 15 while the unskilled men get 6 annas per head per day. Their outturn is over 8,000 maunds of wheat flour annually. The work is done only on wages, each charging 8 annas to 10 annas per maund. Wheat is not ground by factory owners on their own account. Grain dealers bring their wheat and get the flour after paying the wages

5. Hardware.

(i) *Phul kaskut utensils.*

There are three centres of this industry in the district, namely Khargupur, Balrampur and Machhligaon, of which the first and the second are more important. At these places utensils of usual kind such as pateli, batuli, gagra, lota, thali, katoras and tumblers are made by recasting old, broken and worn-out phul and kaskut ware. Some delicate articles of phul and jasta are also made at Balrampur, but they are rare to some extent and are generally made to order. Badri Narain of this town makes imitation bidri work from jasta and brass, which is very much appreciated and sells at Rs. 6 to Rs. 8 a seer.

Raw materials imported from Mirzapur is very negligible, almost all the phul and kaskut used in this industry is to be had from within the district. It is estimated that 9,600 maunds of old and broken utensils are recast each year. They are brought from villages by the hawkers (pheriwalas) by exchange and sold either to dealers or manufacturers at the rate of 12 annas a seer for kaskut and Re. 1 to Re. 1-12 for phul. The total comes to about Rs. 12,000.

Labour.—There are 400 men fully engaged in making utensils. They generally work at their own homes, though there are some who own small factories and engage journeymen workers. The largest centre is Khargupur where about 90 per cent. of the workers reside. The special facilities of the place are—(i) trained labour—as the industry is said to be of very long standing, and (ii) the wood is very cheap and easily available in the neighbourhood.

Wages.—The casting charges are Rs. 40 per maund for thalees, lotas Rs. 35 per maund, and batulis and patilis Rs. 18 to Rs. 20 per maund. The monthly wages of a metal worker comes to Rs. 25 to Rs. 30. Mostly lotas and patilis or batulis are manufactured. Journeymen workers when engaged by them are paid at the rate of Rs. 10 a month, while the extra profits from the labour goes into the pockets of their employers.

Outturn.—One man is said to cast 2 maunds of metal in a month and after chiselling and polishing get $1\frac{1}{2}$ maunds of ready-made articles. The work lasts throughout the year. It is estimated that the total outturn of all the workers is 7,200 maunds of phul and kaskut ware annually.

Prices.—The following are the prices of the articles sold in the district :—

			Rs. a.
Thalees	...	...	2 14 a seer.
Tumblers	...	...	2 4 „
Lotas	...	...	2 0 „
Katoras	...	...	1 8 „
Gagra	...	...	1 6 „
Patili, big and small	...	...	1 5 „
Batulis, big	...	...	1 3 „

Marketing system.—Manufacturers sell their goods either to pheriwalas or big dealers of the locality. The hawkers (pheriwalas) take them to villages and the big dealers send them to Gonda city, Balrampur, Mankapur and other places. Some are also exported to neighbouring districts of Fyzabad and Basti. No attempts are made to push the articles into the markets, nor is there any advertising agency.

Improvements.—(1) New types of lathes and handy and cheap machinery should be used by well-to-do metal workers and small factory owners :—(a) The hand lathes of the Madras pattern by which one coolie can turn two lathes simultaneously, producing a continuous rotary motion with the help of crank handle and a rope passing round the shaft of the lathe, is both useful and adaptable under the present condition of this industry. This will save time and labour. (b) Introduction of punching machines to save the trouble of cutting with scissors. (c) Introduction of better and more permanent plate-moulds. A copper pattern may be used as a mould, made in two vertical halves, the pieces being kept together by four small friction clutches

(2) The diffusion of technical and art education.

(3) The adoption of improved artistic patterns and designs.

(4) Starting of co-operative societies for the supply of material and sale of products.

(ii) *Cutlery.*

Sword-sticks and knives.—There are eight men in Balrampur town who make sword-sticks and knives of a decent quality. They are not whole-time workers but are all in the service of Balrampur Raj where they are employed in the local armoury to daily clean the firearms and swords, etc. It is only in

leisure hours that they make any thing. Sword-sticks are not much in demand, hence their manufacture is very small. They are generally made to order and their prices range from Rs. 5 to Rs. 20. Knives of all qualities are more in demand, so only these are mostly made. Their prices vary from 1 anna 6 pies to 4 annas according to the quality of the blade and that of the handle. They are taken by itinerant sellers and sold in the village markets. This supplementary income comes to Rs. 4 to Rs. 5 per head per month. Balrampur Raj pays them Rs. 7-8 per month. The workers turn out 3,000 to 3,500 knives annually. The industry could be extended and improved by improving the blades and creating a demand. Balrampur Raj could easily take the initiative in the matter.

6. Oil.

Essential Oils.

Sandalwood oil.—Manakapur has a sandal wood oil factory, belonging to Messrs. Mathura Prasad, Suraj Prasad. The proprietors are residents of Fyzabad (Oudh) but the head office of this firm is situated in Kanauj. The factory is equipped for 24 degs but all are not worked regularly. The work depends on the supply of sandalwood and fuel. Oil is not sold at the factory but is exported to Kanauj in copper vessels each containing 20 seers. The railway freight from Manakapur to Kanauj for this is Re. 2-13 per maund. The process of manufacture is quite simple. Sandalwood is reduced into powder by means of files worked with manual labour and is then put into degs with sufficient quantity of water added to it. The deg is covered with close fitting lids and made air-tight with a paste of cotton and earth. The centre of the lid contains a hole in which is inserted the leading tube. This tube passes through a tank full of cold water and ends in a copper receiver which is kept outside it. The deg is heated by direct fire and the issuing vapours cool down in the tube, then passing into the receiver. These receivers are emptied every 12 hours and are replaced by a fresh set. This process continues for a week but the water of the tank is changed as soon as it becomes luke warm.

Raw material.—Sandalwood to the extent of 1,100 maunds was imported from Bangalore. It is to be had at Rs. 1,800 per

ton, i.e. 27 maunds. At this rate the total value of import comes to Rs. 73,333 ex-godown. Railway freight for sandalwood from Malabar to Mankapur is Rs. 3-4 per maund. If this be added to the original price, it will increase to Rs. 77,183.

Fuel is to be had from the neighbouring Tikri forest. Four hundred chattas, each consisting of 100 maunds, were bought and used for the purpose. The total consumption thus will be 40,000 maunds valued at Rs. 11,200 (i.e. Rs. 28 per 100 maunds).

Labour.—The factory is controlled by a munim who gets Rs. 20 per month. There are 15 filemen to reduce the sandalwood into powder, and 12 men who attend at the furnace. Besides these there are three labourers who do the miscellaneous work like pulling water from the wells to fill the tanks. The total number of hands thus engaged in this factory is 31.

Wages.—Filemen are paid by piece-work at Re. 1-8 per maund. One man turns out 7 to 8 seers of powder in a day and thus does not get more than about 5 annas. Men attending furnaces are paid monthly at Rs. 11 each and other labourers get Rs. 10 per month.

Outturn.—One charge consists of 1 maund and 12 seers of powdered sandalwood which is heated for one week continuously and yields about 2 seers and 12 chattaks of oil. The total annual outturn is said to have been 60 maunds last year.

Marketing system.—Oil is not sold at all at Mankapur. The product is exported to the head office at Kanauj (Farrukhabad district).

Chief difficulty.—The sandalwood was previously imported from Mysore, but since that State itself started a big sandalwood oil factory the sales of wood have been totally stopped. The State has now gone further, to bid in Madras and Coorg markets and has thus stood as a fearful competitor for the small capitalists of Kanauj. The result is that the distillers find it impossible to get all the sandalwood that they require. Besides this, the Madras Government insists on a payment of 25 per cent. in advance and the remaining 75 per cent. within three months of the auction. The buyers of wood find it difficult to

pay the latter in such a short time and hence they have suggested the following remedy to overcome the difficulty. The sandalwood should be stored after the sale in a bonded warehouse either by the Madras Government or by the United Provinces Government and payment may be made as wood is removed out of that warehouse. This seems to be quite a feasible arrangement and efforts should be made to give effect to it.

7. Miscellaneous.

(i) *Fishing*.—The rivers and lakes of this district are full of fish and fishing is resorted to everywhere, although the chief centres are Balrampur, Jarwal Road, Bahramghat and Utraula city. The district is said to possess the largest number of fishermen in Oudh, 647 (in 1911), and all of them are always engaged. The fish are caught with the net, rod and line, various forms of wicker baskets and traps and also with the pachki or five-pronged spear. The species of fish found here are practically the same as are met with elsewhere in Oudh. They are used as food by the majority of the people and find a ready sale in the local markets. Tharus of the north and Kahars, Pasis, Mallahs, and Khewats are chiefly engaged in this industry. Fish are also dried in the sun and are taken to the hills for barter with the Nepal people.

(ii) *Jail Industries*.—The chief industries of Gonda District Jail are—(1) durries, (2) carpets, (3) newar, (4) munj matting, (5) oil-pressing, (6) arhar baskets, etc. But the particular industry in which it has specialized and holds a monopoly for fine products is chick-making.

(1) *Chicks*.—Chicks are supplied by jail authorities to private purchasers, but mostly to Government offices at several places in the province. The prices are as follows :—

Quality.	Description.	Rate per sq. ft.			Remarks.
		Rs.	a.	p.	
Ordinary ...	Plain bamboo chicks bound with plain cloth ...	0	3	0	Without net fringe at the bottom.
.. ...	Green, bound with blue or black cloth	0	3	6	
.. ...	Green, bound with blue or black cloth	0	4	0	
	newar ...	0	4	0	

Quality.	Description.	Rate per sq. ft.		Remarks.
		Rs.	a. p.	
Fine	...Light stone silicate paint bound with blue newar	...	0 5 0	} With net fringe at the bottom.
	... Gray enamel paint bound with blue newar	...	0 5 0	
	... Yellow chrome paint bound with blue newar	...	0 5 0	

Raw materials are used as follows :—

Articles.	Fine chicks.	Coarse chicks.	Place of origin.
Bamboo	... 2 No.	2½ No.	Padrauna (Gorakhpur district) Rs. 3-8 per 100.
Eyelets	... 5	3	F. N. Gupta and Sons, Calcutta, through Director of Industries, United Provinces.
Thread	... 4-chataks	8 chataks	Tulsidas, Tejpal Mills, Hathras.
Garha or dusuti	½ yard	1½ yards	Jail.
Jali or fringe	... 1 chatak	½ chatak	Jail.

Besides these, paints for dyeing chicks are also used. Two varieties—(1) green at Rs. 48 per cwt. and (2) light stone at Rs. 51 per cwt., is bought from Shalimar Paint Company of Calcutta through the Director of Industries. Eyelets no. 28 are bought at Rs. 2-4 per gross, and no. 27 at Rs. 2 per gross. They were at first bought from W. Leslie and Company of Calcutta at Rs. 3-4 and Rs. 3, respectively, but now they are had from F. N. Gupta and Sons through the Director of Industries.

(2) *Carpets*.—Carpets are sold at Rs. 4 a seer (7' by 4'). Three men are engaged at a time, two of them actually weave while one man, called reader, guides them orally. They weave about 4 inches a day. The average weight of a carpet is 8 seers. It is made out of no. 10 yarn which is to be had for Rs. 10-2 per bundle of 10 lbs. each.

(3) *Durries*.—Durries are sold at the following rates :—Striped Rs. 3 a seer; Kanta Patti Rs. 3-8 per seer, Flowered

Rs. 4 a seer. The standard size is 7' × 4'. Two persons work together and during the day produce about 2 feet of it. The average weight of a durrie is 3 seers.

(4) *Newar*.—One man makes about 60 feet of newar which weighs 7 chataks and is 3 inches wide. It is sold at Rs. 3-4 a seer (white) and Rs. 3-14 a seer (coloured dark blue).

(5) *Munj matting*.—Jwala Prasad, contractor of Kasganj (Etah) supplies the raw materials at Rs. 2-14 per maund. It is pounded in jail at the rate of 15 seers per head per day. It is twisted at 300 yards per day which weighs one seer. One man weaves 6 feet (1 yard width) per day. It is sold at Re. 1 per square yard (plain).

(6) *Oilseed pressing*.—Mustard was purchased locally at 5 seers for a rupee this year (February 1923). Manual labour is invariably used. The seeds yield one-third of oil. It is sold by one jail to another at Re. 1 a seer.

(7) *Baskets from arhar stalks* are made for jail use. One man makes three small or two ordinary baskets or one big. Arhar stalks are bought from neighbouring villages at 11 bundles (about 4 maunds) for a rupee, one bundle making about 6 to 7 baskets.

(iii) *Ornamental cane boxes (pitaras)*.—These cane boxes are made circular in shape, with a dome-like covering over it. Cow dung mixed with earth is plastered over the surface all round both inside and outside it and then it is well stuck with good thick paper. After a thick coating of green or red colour over the paper, ornamental designs of flowers and creepers are drawn out with a small hair brush in different colours. These boxes are made of different sizes, the bases varying from 1½ feet to 1¼ yards in diameter. The height is in proportion to the base of the box. They are generally used by villagers during marriages. The chief centres of this industry are Utraula and Balrampur.

Cane boxes are made by Doms (untouchables) while the rest of the work is done by the painters. Utraula painters advance Rs. 75 to Rs. 100 each by instalments in a year to five families living in village Siri Nagar, a few miles off, and get the ready-made boxes. The Balrampur men get their cane boxes from village Visrampur near Betahmiaghat. The boxes

of $1\frac{1}{4}$ yards diameter are made at the rate of 12 annas each or Rs. 7 for 10 and smaller ones for 6 annas and 9 annas each.

There are altogether five men engaged in this industry. Their combined output is estimated to be 1,000 boxes in a year and their net saving is said to be Rs. 300 each which comes to Rs. 25 a month. The boxes are sold at Re. 1, Rs. 2 and Rs. 3 according to their sizes. The sale is all local. An effort should be made to expand the market, as they are required by all villagers. Some agents or middlemen might be engaged who would take them round.

(iv) *Painted tar fans*.—Fans of palm leaves of different sizes are made at Utraula and are painted with flowered designs by kamangars in the same way as the pottery or cane pitaras described previously. They are sold at 2 annas, 8 annas, 12 annas, Re. 1 and Re. 1-8 each according to the size.

Palm leaves are imported from Gorakhpur and Basti at 1 anna 6 pies, 2 annas and 2 annas 6 pies according to size. One fan is made out of one leaf. One thousand five hundred leaves worth Rs. 175 are imported yearly. There are only two men making these fans and each of them earns about 6 annas per day. One man makes one big fan in a day or two to three smaller ones. It is estimated that the total annual output is 1,500 fans. The fans are generally made to order. Sale is local, export being confined to residents presenting them to their friends and relatives. The industry could be extended further if apprentices are taken on piece wage system and attempts made to get in touch with outside purchasers and dealers. The product is good and artistic and a demand is certain.

(v) *Naicha manufacture*.—Ornamental naichas are made by three persons in Utraula, but work is only carried on as a subsidiary industry. The customers have to give metal part called kulfī and the rest is made by the naicha maker. About 1,000 negalees (a sort of narkul) are imported annually from Nepal by the local banias and are sold to manufacturers at Rs. 3 to Rs. 6 per 100. They are worth Rs. 40 to Rs. 50. Cloth about 750 yards and some kalabatun and silk is also bought through middlemen, although they all come from Cawnpore. They are valued at Rs. 1,000. There are only three persons engaged in naicha-making and they earn about 6 annas per

head per day. Their outturn is 1 naicha per day and their annual output is estimated to be 1,000. The prices depend upon the ornamentation chiefly, and vary from Re. 1 to Rs. 3, but the average and usual price is Rs. 2. Sale is local and the export is through the residents of the district.

8. Textiles.

Cloth printing.—The biggest centre of cloth printing is Katra, a few miles north of Colonelganj railway station, and its neighbouring villages Birpur and Dobagarh. Two to four families are to be seen at Adampur, Rampur Pande, Nankhan (or Choubepur), Khera Majwan (near Vazirganj), Khargupur, Balrampur and Shohratganj. These meet the local demand. Razais, toshaks and jajims are only occasionally made. Usually dogas are printed. A doga is a sort of razai with two sheets joined together one printed black and the other green or red. It is stuffed with ginned cotton and generally used by village people during winter season as a covering.

Raw material.—Garha cloth is imported from Bara Banki and Bijnor districts. The annual consumption is estimated to be 360,000 yards worth Rs. 1,35,000. The dyes and other ingredients used in printing are alizarine, kasis, dhaugum, and harra, alum, etc., which are to be had here at Rs. 6, 4 annas, Re. 1-8, 2 annas and Re. 1-4 a seer respectively. The total dyes, etc. used annually comes to about 1,875 seers costing Rs. 5,625.

Labour.—There are 200 men engaged in this industry for four months in a year.

Wages.—Printers work at their own homes, but they are supplied with all the raw materials by the local cloth dealers and are paid piece wages, which come to about 6 annas to 8 annas per day. During the season one man prints 200 dogas and earns about Rs. 150.

Outturn and price.—The annual outturn is said to be 40,000 dogas. Dogas are sold at Rs. 3-12 to Rs. 4 each, while toshaks and razais are made to order at Rs. 4 to Rs. 5 each.

Marketing system.—Some cloth-printers buy the raw materials on their own account—partly in cash and partly on credit—and put the manufactures in the open market either in their own village or outside it. But more often they work on contract. The village bania supplies the cloth, etc., and pays

him at the rate of 8 annas per dogra. The bania in his turn either exports the product to neighbouring markets of Bara Banki and Bahraich districts or sells them to itinerant dealers who take them to different markets—far and near. A list of middlemen will be found in Chapter V.

Improvements.—There is not much room in the manufacturing process, as the products supply a specialized demand. But the industry could be organized on co-operative lines—the printers buying the raw materials on their own account and on the system of joint purchase. Printing blocks are made at Katra by three carpenters who are all related among themselves. They are of nine different designs and sizes and their prices are 2 annas, 8 annas, Re. 1-2 and Re. 1-4 each. They last for two years, though only in the first year, they give good clear impressions. The cheaper blocks are made of nim wood and the costlier of shisham. The carpenters take to their manufacture as a supplementary work; generally they are engaged in making agricultural tools, cart wheels and other sundry articles. People from other centres of cloth-printing also come here to buy these blocks.

CHAPTER III.

INDUSTRIAL POSSIBILITIES.

1. *Oilseed crushing.*—Gonda district produces over 1½ lakh maunds of linseed, over 90,000 maunds of rape and mustard, over 10,000 maunds of til seed, and 21,000 maunds of Mahua, mostly in Utraula Balrampur and Tarai tracts. A large portion of this is exported outside. An oil mill started anywhere among these places will surely succeed. Balrampur and Gonda are well situated as regards raw material and are on railway lines. The proprietors of the two idle flour mills be well advised to take up the idea of oilseed crushing and start the work by adding a few ghanis.

2. *Sugar manufacture.*—Sugarcane cultivation is on the increase, as it is growing in popularity in the central upland plain which consists of a large portion of Utraula tahsil, pargana of Gonda, and portions of Mahadewa and Nawabganj. It is time that the manufacture of sugar should be begun in the district on a large scale. Two factories are working in Utraula tahsil (vide Chapter I) on a small scale and are said to be quite successful. Their example should emulate others to multiply the number of such factories.

3. *Timber sawing and wood working.*—About three and three-quarter million cubic feet of timber is auctioned each year by the Forest department alone. This the latter hope to double in the very near future. Timber is exported from the district in an unsawn condition. There is need of a saw mill and the best place for it will be Chandarpur—10 miles away from Pachperwa railway station—where one hundred thousand million cubic feet of sal and asna timber will be available each year for at least the next thirty years.

A regular carpentry school is needed in Gonda district to teach wood working and the Balrampur estate should establish one, as has already been done by the progressive Nanpara Court of Wards about two years ago. The trained workers will then

be able to start small wood working factories and utilize a large portion of the existing local raw material.

4. *Sword-sticks*.—The manufacture of sword-sticks is suffering for lack of advertisement. People outside Balrampur hardly know that they are made there. Sticks are universally used by all classes of people and sword-sticks will find a ready favour as a handy weapon of self-defence. As no licence is at present needed for keeping a sword-stick, they will meet a ready demand when placed in outside markets. The manufacturers also lack capital. Hence there is the necessity of a middle man at the present stage of this industry who would finance the workers and sell their products in larger cities.

5. *Fruits and vegetables*.—Fruits and vegetables can very easily be grown in the district and railway facilities exist for their export to Bara Banki and Lucknow on the west and Gorakhpur and Benares on the east. Both fruits and vegetables will find a ready market at these places, as the above cities are not in a position to grow all that they get from other neighbouring districts. An additional source of income can thus be found by the landowners who live near railway stations in this district.

CHAPTER IV.

STATISTICS.

1. Art pottery.

Kasgar's painting (Utraula pottery).

Raw materials—

Export.—Nil.

Import—

*Quantity.—*100 pots—14 to 15 seers of hartal, safeda, saindur and indigo.

*Place of origin.—*Local—Cawnpore.

*Value.—*Rupees 6 to Rs. 7, Rs. 20.

Manufactures—

*Labour.—*Two men.

*Wages.—*Six annas per head per day.

*Outturn.—*One hundred flower pots and vases.

*Price.—*Eight annas each flower pot, and 6 annas each vase.

*Marketing system.—*Sold to local people for export to friends and relatives.

2. Building materials.

(a) Bricks.

Raw materials—

*Export.—*Nil.

*Import.—*Nil.

Manufactures—

*Labour.—*One hundred and fifty men, skilled and unskilled.

*Wages.—Mistri.—*Rupees 25 to Rs. 30 per mensem. others Rs. 15 per mensem.

*Labourers.—*Six annas a day.

*Outturn.—*Two hundred and ten lakhs of bricks.

Prices.—I class Rs. 15 to Rs. 16 per 1,000.

II class Rs. 13-8 per 1,000.

III class Rs. 11-8 per 1,000.

Marketing system.—Supplied on order.

(b) *Tiles.*

Raw materials—

Export.—Nil.

Import.—Nil.

Manufactures—

Labour engaged.—Twenty men.

Wages.—Three annas to 4 annas per head per day.

Outturn.—Two hundred tiles per hand per day, or
2,000—3,000 monthly.

Price.—Rupees 3-8 to Rs. 4 per 1,000 small.

Rupees 18 per 1,000 big.

Marketing system.—Supplied when ordered.

(c) *Lime.*

Raw materials—

Export.—Nil.

Import.—Nil.

Manufactures—

Labour engaged.—Ten skilled and 25 unskilled.

Wages.—*Mistri.*—Rupees 40 per mensem, others

Rs. 10 to Rs. 15 per mensem. *Labourers.*

Four annas to 7 annas per head per day.

Outturn.—81,000 cubic feet.

Price.—Rupees 25 per 100 cubic feet ex-godown.

Rupees 28 per 100 cubic feet including cart-
age and octroi.

Marketing system.—Sold when ordered.

3. Food grains.

Wheat grinding.

Raw materials—

Import.—Nil.

Export—

Quantity.—3,800,000 maunds.

Place of consignment.—Cawnpore, Benares, Fyzabad
and in the west of province.

Manufactures—

Labour engaged.—Eight skilled and 25 unskilled.

Wages.—*Driver.*—Rupees 40 per mensem, others Rs. 10 to Rs. 15 per mensem each. *Labourers.*—Six annas a day.

Outturn.—8,000 maunds.

Price.—Grinding 8 annas to 10 annas a maund.

Marketing system.—Ground on wage system; sold by local grain dealers.

4. Hardware.**(a) Phul and kaskut utensils.****Raw materials—**

Export.—Nil.

Import.—

Quantity.—Nine thousand and six hundred maunds.

Place of origin.—Local and Mirzapur.

Value.—Rupees 12,000.

Manufactures—

Labour.—Four hundred men.

Wages.—Rupees 25 to Rs. 30 per mensem. Journeyman Rs. 10 per mensem.

Outturn.—Seven thousand and two hundred maunds.

Price.—Rupees 1-3 to Rs. 2-14 per seer.

Marketing system.—Sold through middlemen, big dealers or itinerant dealers.

(b) Cutlery.**Sword-sticks and knives—**

Export.—Nil.

Import.—Nil.

Manufactures—

Labour engaged.—Eight men.

Wages.—Rupees 5 per head per month.

Outturn.—Three thousand to 3,500 knives.

Sword-sticks made to order.

Prices.—Sword-sticks Rs. 5 to Rs. 20 each.

Knives 1 anna 6 pies to 4 annas each.

Marketing system.—Sold to bisatees or pedlars.

3 a. p.

5. Miscellaneous.

(a) *Cane Baskets (Painted).**Raw materials—**Export.—Nil.**Import—**Quantity.—1,000 cane baskets.**Place of origin.—Sri Nagar and Vishampur villages in the Gonda district.**Value.—Rupees 500.**Manufactures—**Labour.—Five men.**Wages.—Rupees 300 a year each.**Outturn.—1,000 boxes.**Prices.—Rupee 1, Rs. 2, Rs. 3.**Marketing system.—People get boxes from manufacturers. No agents and no advertisement.*(b) *Tar fans (painted).**Raw materials—**Export.—Nil.**Import—**Quantity.—1,500 tar leaves.**Place of origin.—Gorakhpur and Basti districts.**Value.—Rupees 175.**Manufactures—**Labour.—Two men.**Wages.—Six annas per day.**Outturn.—1,500 fans.**Price.—Two annas to Re. 1-8 according to size.**Marketing system.—Sold locally. People export to friends and relatives. Some are exported for sale as well.*(c) *Naicha manufacture.**Raw materials—**Export.—Nil.**Import—**Quantity.—1,000 negalees.**Place of origin.—Nepal.**Value.—Rupees 40 to Rs. 50.*

Manufacture—*Labour.*—Three men.*Wages.*—Six annas a day.*Outturn.*—1,000 naichas.*Price.*—Rupee 1 to Rs. 3.*Marketing system.*—Sold locally and exported for friends and relatives.**6. Oil (sandalwood).****Raw materials—***Export.*—Nil.*Import—*

	Sandal.	Fuel.
<i>Quantity.</i> —	1,100 maunds.	40,000 maunds.
<i>Place of origin.</i> —	Bangalore	Local Tirki forest.
<i>Value.</i> —	Rupees 77,183.	Rs. 11,200

Manufactures—*Labour—*

		No.
Kharadis	...	15
Bhatti-men	...	12
Labourers	...	3

	Kharadis.	Bhatti-men.	Labourers.
<i>Wages.</i> —	Rupees 1-8 per maund or 4 annas to 5 annas a day.	Rs. 11 each per mensem.	Rs. 10 each per mensem.

Outturn.—60 maunds last year.*Marketing system.*—Sent to Kanauj (head office).**7. Textiles.***Cloth printing.***Raw materials—***Import—*

	Cloth.	Dyes, etc.
<i>Quantity.</i> —	360,000 yards.	1,875 seers.
<i>Place of origin.</i> —	Bara Banki, Cawnpore and Bijnor districts.	
<i>Value.</i> —	Rupees 1,35,000 (cloth) and Rs. 5,625, (dyes)	
<i>Export.</i> —	Nil.	

*Manufactures—**Labour.*—200 men.*Wages.*—Six annas to 8 annas a day.*Outturn.*—40,000 dogas.*Prices.*—Rupees 3-8 to Rs. 4 each.*Marketing system.*—Made on contract and sold to pheriwalas by the baniyas.

CHAPTER V.**DIRECTORY.****1. List of pottery makers.**

Mohammad Bux, Utraula.
Bafati, Utraula.
Ghafur Kasgar, Khargupur.
L. C. School, Balrampur (amateur).

2. List of important brick-kiln owners.

Dhani Ram Sarju Prasad (of Fyzabad), Gonda.
Raj Bahadur, Gonda.
Bachan, Gonda.
Hardwar, Gonda.
Jang Bahadur Singh (of Piyagpur), Balrampur.
Nousha, Balrampur.
Chhotey Lal, Balrampur.
Balmakund, Balrampur.
Thakur Bux Singh, Balrampur.
Lala Ram Raghubir Lal (of Fyzabad), Balrampur.
Hardeo Bux, Balrampur.

3. List of important tile manufacturers.

Budhu, Gonda.
Baleshar, Gonda.
Nageshar, Gonda.

4. List of important lime mills.

Shyam Sundar Lal, Gonda.
Shifi-Ullah, Gonda.
Gur Sahai Lal, Gonda.
Ram Saran, Gonda.
Janki Parshad, Gonda (closed).

5. List of important flour mills.

Shyam Sundar Lal, Gonda.
Hafiz Ali Khan, Gonda.

Gur Sahai Lal, Gonda (not working).

Ram Saran, Gonda (not working).

6. List of important grain exporters.

Rally Brothers, Colonelganj.

Loius Dryfus, Colonelganj.

Mathura Prasad Ramdhan Das, Colonelganj.

Maikulal Basant Lal, Colonelganj.

Raghunandan Pirthidin, Colonelganj.

Kali Din Bhairon Din, Colonelganj.

Natha Mal, Shermal, Colonelganj.

Ram Kishan Das Sheo Narain, Colonelganj.

Khiali Ram Newal Kishore, Colonelganj.

Chhaganlal Mohanji, Colonelganj.

Baldeo Sahai Kalu Ram, Colonelganj.

Behari Lal Hazari Lal, Colonelganj.

Phulchand Ishardas, Colonelganj.

Sukhram Das, Bargaon, Gonda.

Omkar Mul, Bargaon, Gonda.

Gouri Dutt Tirkha Ram, Bargaon, Gonda.

Durga Prasad Mussadi Lal, Bargaon, Gonda.

Ganesh Mull (Agent) Dadra Bazar, Gonda.

Ghan Shyam Das Suraj Mall, Gonda City.

Hurji Mal Sheo Narain, Balrampur.

Hukam Chand Johri Mull, Balrampur.

Mussaddi Shyamlal, Balrampur.

Kundan Lal Kuramal, Balrampur.

Gurnandan Das, Banarsi Das, Balrampur.

Louis Dryfus (Agent Kedar Nath), Balrampur.

Rally Brothers (Agent Ram Adhin), Balrampur.

Shyam Sundar Lal, Mankapur.

Baijnath Sarju Prasad, Mankapur.

Ganga Ram Gurcharan, Mankapur.

Birju Jai Lal, Mankapur.

Shyam Sundar Shyam Lal, Nawabganj.

7. Sugar factories.

Hyati Mallik Sugar Factory, Maskanwa Bazar, Utraula

Malik Sharif Hasan Sugar Factory, Intai Rampr

Utraula.

8. Phul and brass utensil makers.

Badri Narain, Balrampur.
Ram Bharosey, Balrampur.
Ghirrau, Machhligaon.
Mathura, Machhligaon.
Bhai Lal Chhangen, Machhligaon.
Bhagi Rath, Machhligaon.

9. Sword-stick makers.

Gajadhar, Chowk, Balrampur.
Balesar, Chowk, Balrampur.
Turanga, Chowk, Balrampur.
Buddhu, Chowk, Balrampur.
Tara Chand, Sabzi Mandi (near Gobind Bagh), Balrampur.
Ram Dularey, Sabzi Mandi (near Gobind Bagh), Balrampur.
Pyarey, Sabzi Mandi (near Gobind Bagh), Balrampur.
Nankai, Sabzi Mandi (near Gobind Bagh), Balrampur.

10. Hide and skin exporters.

Dost Mohammad, Colonelganj.
Mohammad Yusuf, Colonelganj.
Hafiz Abdul Sobhan, Utraula.
Chinku, Utraula.

11. Bone exporters.

Messrs. Rally Brothers (Agent) Colonelganj.
Abdul Hamid, Balrampur.
Wajid Hussain, Balrampur.
Abdul Wahid, Gonda City.

12. Flower painted cane basket makers.

Mohammad Bux, Utraula.
Bafati, Utraula.
Sultan, Tehri Bazar, Balrampur.
Sher Zaman, Tehri Bazar, Balrampur.
Mohammad Ali, Tehri Bazar, Balrampur.

13. Artistic tar fan makers

Khadim Husain, Utraula.
Sahibzad Khan, Utraula.

14. Artistic naicha makers.

Mirza Ahmad Beg, Utraula.
Ashraf, Utraula.
Syed Nazeer, Utraula.

15. Oil manufacturers.

Sandalwood oil factory of Mathura Prasad Suraj Prasad
Mankapur.

16. Cloth-printing factory owners.

Sarju Prasad Rastogi, Katra.
Nageshar Kalwar, Katra.
Ghirran Rastogi, Katra.
Chandi Bakkal, Katra.
Jagan Kalwar, Katra.
Sunderlal Tiwari, Katra.
Ganga Parshad, Katra.
Gaya Parshad, Katra.
Ram Ratan Rastogi, Katra.
Ram Ghulam Rastogi, Katra.
Ram Das Rastogi, Katra.
Madho Ram Rastogi, Katra.
Jagannath Rastogi, Katra.
Balmukand Rastogi, Katra.
Basudeva Rastogi, Katra.
Mahabir, Birpur.
Salig Ram Birpur.
Bechan, Dabah Bazar.
Patān Din Lodhī, Dabah Bazar.

17. Block makers.

Mindai, Carpenter, Katra.
Islam, Carpenter, Katra.
Abdulla, Carpenter, Katra.

18. Forest contractors.

Nageshar Village Raira, Thana Pachperwa, Gonda.
Mohammad Ibrahim, La Touche Road, Lucknow.
Mohammad Said, Iron Bridge, Lucknow.
Mohammad Yakub, Dhalgour Tola, Jaunpur.
Mohammad Yusuf, Dhalgour Tola, Jaunpur.
Chait Ram, Jhighar, district Rohtak (Punjab).

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Gaya Parshad, Katra.
Ram Ratan Rastogi, Katra.
Ram Ghulam Rastogi, Katra.
Ram Das Rastogi, Katra.
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of the United Provinces

Gorakhpur District

By

MOHAMED MUSHTAQ, B.Sc.



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CONTENTS.

	<i>Page.</i>
FOREWORD	i—iii
CHAPTER I—	
1. General features	1
2. Area	<i>ib.</i>
3. List of Ferries	2
4. List of Roads	<i>ib.</i>
5. Railways	4
6. Markets	<i>ib.</i>
7. Fairs	6
8. Cattle Census	7
CHAPTER II—General—	
1. Art industries (Embroidery)	8
2. Building materials :—	
(a) Bricks	9
(b) Lime	<i>ib.</i>
3. Chemicals :—	
(a) Saltpetre	10
(b) Indigo manufacture	11
4. Food-grains :—	
(a) General statement	12
(b) Dal splitting	13
(c) Flour mills	<i>ib.</i>
5. Hardware :—	
(i) Brass ware	14
(ii) Steel trunks	16
6. Leather	17
7. Miscellaneous :—	
(i) Soap making	<i>ib.</i>
(ii) Jail industries	18
(iii) Forest produces	<i>ib.</i>
(iv) Bristles	19
(v) Bengal and North-Western Ry. Co.'s Loco. Works	20
(vi) Fisheries	<i>ib.</i>
8. Oil	21

	<i>Page.</i>
9. Textiles :—	
A. Cotton	23
B. Wool	26
10. Wood work :—	
1. Furniture making	28
2. Palanquin making	<i>ib.</i>
3. Turnery and lacquered work	<i>ib.</i>
4. Bamboo works	29
CHAPTER III—Industrial possibilities :—	
1. Dal splitting	30
2. Rice hulling	<i>ib.</i>
3. Bone-meal	<i>ib.</i>
4. Oil pressing	<i>ib.</i>
5. Power-sawing	<i>ib.</i>
CHAPTER IV—Statistics :—	
1. Building materials	31
2. Chemicals	32
3. Food grains	34
4. Hardware	37
5. Miscellaneous	38
6. Oil	43
7. Textiles	48
8. Wood work	50
CHAPTER V—	
1. List of Banks	53
2. List of Industrial Schools	<i>ib.</i>
3. List of Brick-kiln owners	<i>ib.</i>
4. List of Lime-kiln owners	<i>ib.</i>
5. List of Saltpetre refiners	<i>ib.</i>
6. List of Flour Mills	54
7. List of owners of city grain markets called "golas"	<i>ib.</i>
8. List of grain exporters	<i>ib.</i>
9. List of Grain and pulse dealers	55
10. List of Hardware dealers	<i>ib.</i>
11. List of Steel trunk manufacturers	<i>ib.</i>
12. List of Hide exporters	<i>ib.</i>
13. List of Skin exporters	<i>ib.</i>
14. List of Bone exporters	56
15. List of Boot and Shoe-making Factories	<i>ib.</i>

	<i>Page.</i>
16. Shoe-merchant	56
17. List of Indigo factories	<i>ib.</i>
18. List of Soap manufacturers	<i>ib.</i>
19. List of Forest Contractors and timber merchants	<i>ib.</i>
20. List of Grass contractors	57
21. List of Bristle exporters	<i>ib.</i>
22. List of Printing presses	<i>ib.</i>
23. List of Oil mills	<i>ib.</i>
24. List of Commission agents for oil	58
25. List of Agent for oil-cake	<i>ib.</i>
26. List of Cotton yarn dealers	<i>ib.</i>
27. List of Weaving Factories	<i>ib.</i>
28. List of Blanket Weaving Factories	<i>ib.</i>
29. List of cloth merchants	<i>ib.</i>
30. List of Furniture makers	59
31. List of Coach-builders	<i>ib.</i>
CHAPTER VI—Miscellaneous—	
Octroi Statement	60
Bibliography	<i>ib.</i>

FOREWORD.

GORAKHPUR is the largest district in the province with an area of 4,514 square miles; out of which 250 square miles or 1/19th of the whole district is covered with reserved forests—Government and private. Forests thus cover about 30 per cent. of the land out of cultivation. They supply a large quantity of timber for local consumption and export, pasturage for cattle and fuel. They are said to be poor in what is classed as the minor forest produce. Its long grasses are simply used for thatching by the residents of the neighbouring villages. The report says that the grasses are fit for manufacture of paper pulp; but the supply is not sufficient to feed even a small mill. Messrs. Heilgers & Co. are exporting large quantities of grasses from the westernmost parts of the province to Calcutta for the manufacture of paper pulp. Transport to other parts of this province like Lucknow which has direct railway connection should not be deficient. No regular search has been made for herbs and medicinal plants, and in view of the fact that they are likely to make useful and important additions to the category of our pharmaceutical products, it may be worth its while to have one made.

Of the agricultural produce, wheat and rice are produced to the extent of about 38 lakhs and 1½ crore maunds respectively. There is no power-hulling of rice and little grinding of wheat. The 8 Flour Mills in the district can hardly deal with 75,000 maunds of wheat. The grains are exported in large quantities, and attempt should be made to export them in a semi-finished condition at least. No enquiry was made about the manufacture of sugar as a special Commission has recently reported on it. Besides sugarcane, linseed deserves special mention. It is grown in 68,000 acres and the production is over 4 lakh maunds every year. A greater portion of it is exported as there is very little use for the oil in the country. This could be utilised if there were a varnish factory.

The needs of the handloom weaving are almost the same everywhere. Only coarse cloth is woven. An attempt should be made to organize the weavers on co-operative lines in order

to enable them to get cheaper yarn by direct purchase from the mills and to sell their goods to their best advantage by storing them in slack seasons.

Of other industries saltpetre deserves mention. It is manufactured on a large scale and is all exported to Calcutta. A portion of it is said to be re-exported from there to the plantations of tea and sugarcane for use as manure. As saltpetre of great purity is not required for manufacture of manure, it is said to be mixed with various other ingredients before export. The district exports about 50,000 maunds of bones, the supply of which can easily expand with the demand. Gorakhpur grows sugarcane over a large area, and the other varieties are also coming in. A factory for the manufacture of manure should succeed in sale, though some difficulty will be experienced in the beginning until its utility as manure is fully demonstrated. It is hoped that it will not be insurmountable.

The district produces 34,000 hides and skins, and has lot of tanning materials, good drainage and plenty of water. It should tan its own material. The city imports over Rs. 56,000 worth of leather and leather goods.

About 200 maunds of pigs' bristles are exported every year and the quantity can be increased with demand as pigs are kept in large numbers in Gorakhpur and its neighbouring districts. Wood is available in any quantities and a small Brush Factory may flourish.

The art of embroiding Sabar leather has become extinct for want of demand. As some people acquainted with the art are still alive an attempt should be made to keep the art alive. Small articles of everyday use like cigarette cases, purses, card cases, etc., should be embroidered and monograms and designs similar to modern tastes introduced in place of couplets.

Lar soap and the Dhussa manufacture should expand with proper organization.

With a large area under forest one would expect Gorakhpur to have a large trade in wooden articles with many allied industries flourishing there. But the absence of skilled labour and want of capital and enterprise has prevented them from springing up. There are 16 bansphors doing cane and bamboo

work, 13 families doing turnery, 25 families taking up palanquin making as a subsidiary occupation and one firm of furniture making. All these should be organized on a large scale. Good designs should be introduced and sale pushed by advertisement. In this district itself with many big estates there should be sufficient demand for these articles. A power saw-mill should certainly pay, and instead of exporting all timber in big logs, ready-made articles could be exported.

I have to acknowledge the help derived from Mr. S. T. Gadre, M.A., A.I.I.Sc., Industrial Chemist to Government, United Provinces, Cawnpore, in revising the report, and my special thanks are due to him for the great assistance received from him.

My thanks are also due to the following gentlemen for help in the survey work :—

A. S. Yadava, Esq., Principal, Technical School, Gorakhpur.

Pt. Damodar Das Misra, Special Manager, Court of Wards.

Mr. B. K. Ghare of the Agricultural College, Cawnpore.

CHAMPA RAM MISRA.

The 10th December, 1923.

CHAPTER I.

INTRODUCTION.

1. General features.

(i) Boundaries—

North—Nepal territory.

East—Champaran and Saran districts of Behar Province.

West—Basti district.

South—The Ghagra river.

(ii) *Topography*.—The district comprises of the following distinct tracts :—

(a) The Tarai which lies below the outer hills is an extensive cultivated belt some ten miles in width, running along the northern borders of the Maharajganj tahsil.

(b) South of the tarai comes a stretch of forest land, mostly Government reserve.

(c) The third is the level plain sloping gently from north-west to south-east.

(d) Then there are the low and broad valleys of the rivers know as “kachhars”—depressions of considerable breadth forming a wide area of low-land which is apt to be inundated in years of heavy rainfall.

(e) The eastern portion of the district is known as “bhat” and consists of the alluvium brought down by the Great Gandak. The soil is extremely retentive of moisture and artificial irrigation is unknown.

2. Area.

	In square miles.
Total area in 1921-22	4,513
I. Barren area—	
(i) Covered with water	173
(ii) Roads, buildings	145.25
(iii) Otherwise barren	44.5
Total barren area	362.8

		In square miles.	
II. Land out of cultivation—			
(i) Groves	107
(ii) Culturable waste	349
(iii) Old fallow	226
(iv) New fallow	157
Total culturable		...	854
III. Cultivated area—			
(i) Irrigated	1,288.5
(ii) Non-irrigated	2,007.5
Total cultivated area		...	3,296

3. List of Ferries.

River.	Ferry.
Rapti	... Belaha, Karmaini, Belghat, Tharauli, Thathar, Nandwa, Sisai, Kartahri, Netwar, Bindghat, Bhanapar, Chanda, Rajpur Kaparwar.
Ghagra	... Belwa, Kalyanpur, Shahpur Tapatia, Godiana, Gola Nainijor, Dohrighat, Turtipar, Karimganj.
Rohin	... Manira Ram.
Little Gandak	... Captainganj.

4. List of Roads.

A. IMPERIAL.

	Length in miles.
Station Road	2

B. PROVINCIAL.

Station Road	2
Ghazipur, Dohrighat and Gorakhpur Road	25
Fyzabad, Basti and Gorakhpur	15

C. LOCAL.

First class metalled roads.

Station Road	12
Gorakhpur-Kasia	30
Kasia-Padrauna	11

	Length in miles.
Deoria-Kasia	21
Deoria-Barhaj	18
Bhatpar-Majhauri	5
Gorakhpur-Nichlaur	21
Ghughli-Maharajganj	12
Gorakhpur-Captainganj	2
Kauri Ram-Bansgaon	4
Padrauna railway station approach	0.3
Rampur-Karkhana link	0.4

Second class unmetalled roads, bridged and drained throughout.

Gorakhpur to Lotan	38
Gola to Kauri Ram	14

Second class unmetalled roads, partially bridged and drained.

Shamdeorwa to Nichlaur	30
Captainganj to Gorakhpur via Pipraich	24
Kasia to Bihar Khand boundary of Saran	17
Gorakhpur-Kunraghat to Ghatinghat	55
Gorakhpur to Khajri Rudrapur	20
Urwa Bazar to Shahpur Jigni	4
Gorakhpur to Lar via Sikriganj	74
Kamanighat to Bansighat via Campierganj	53
Ganeshpur to Sinduria via Maharajganj	25
Adda Moti Ram to Gauridih	5
Gauri Bazar railway station to Bakhra	5
Hata to Pagra	4
Sahjanwa to Niwas via Telaura (Basti)	10
Nichlaur to Tingari	2
Pipraich to Partawal	10
Pharenda to Bukwa via Purandarpur	11
Kauri Ram to Gagha via Gajpur	11
Padrauna to Khajuria	6
Samaur to Saraia Section of Tiwaripur	2

In addition, there are 3rd class roads, the total length of which is 488 miles.

5. Railways.

Railway.	Section.	Distance Miles.	Railway Stations.
B. N. W. Ry.	Cawnpore— Katihar (Main Line).	67	Sabjanwa, Jagat Bela, Domin- garh, Gorakhpur, Kusmhi, Chauri Chaura, Gauri Bazar, tahsil Deoria, Nunkhar, Bhatni, Bhatpar Rani, Ban- kata.
	Gorakhpur— Savan Branch.	69	Gorakhpur, Kuraghat, Pip- raich, Bodarwar, Captain- gan, Ramkola, Padrauna, Kath Kuinyan, Dudahi, Tamkohi Road, Taria Sujan.
	Bhatni— Benares.	18	Bhatni, Salempur, Lar Road, Turtipar.
	Bhatni— Barhaj.	21	Bhatni, Salempur, Satraon, Barhaj.
	Gorakhpur— Gonda.	34	Gorakhpur, Maniram, Peppe- ganj, Rawatganj, Campier- ganj, Pharendra, Lehra, Bridgmanganj.
	Gorakhpur— Narkatiaganj.	56	Gorakhpur, Kunraghat, Pip- raich, Bodarwar, Captain- ganj, Ghughli, Siswa Bazar, Khada, Chhitauni.

6. List of Markets.

Tahsil.	Locality.	Market days.
Padrauna	Babhnauli	... Friday and Tuesday
	Tariya Buzurg	... Friday and Tuesday
	Tariya Sujan	... Friday and Monday.
	Padrauna	... Tuesday and Satur- day.
	Tamkohi	... Thursday and Mon- day.
	Tiwari Patti	... Thursday and Sun- day.
	Pachrukha	... Friday and Monday
	Sahabganj	... Tuesday, Thursday and Saturday.
Fatherdewa	... Wednesday and Saturday.	

Tahsil.	Locality.	Market days.
	Ramkola	... Thursday and Saturday.
Hata	... Captainganj	... Friday and Tuesday.
	Mansurganj	... Monday.
	Narayanpur	... Sunday and Thursday.
	Bodarwar	... Thursday and Saturday.
	Padri	... Saturday.
	Rudarpur	... Friday and Tuesday.
	Hata	... Friday and Tuesday.
	Rampur Karkhana	Monday and Thursday.
	Hetimpur	... Tuesday and Saturday.
	Indarpur	... Saturday and Wednesday.
Bansgaon	... Malaon	... Wednesday.
	Bansgaon	... Monday and Friday.
	Gagha	... Tuesday.
	Barhalganj	... Saturday and Wednesday.
	Gola Bazar	... Tuesday and Friday.
	Belghat	... Friday.
	Sikriganj	... Sunday and Wednesday.
	Unwal	... Thursday.
	Shahpur	... Ditto
	Mulhanpur	... Friday.
Maharajganj	... Nautanwa	... Saturday.
	Thuthibari	... Sunday and Thursday.
	Nichloul	... Thursday.
	Siswa Bazar	... Wednesday and Saturday.
	Ghughli	... Ditto
	Nadwa Bazar	... Sunday.
	Purandarpur	... Thursday.
	Bridgmanganj	... Sunday.
	Maharajganj	...
	Mansurganj	... Monday.
	Campierganj	...
	Peppeganj	... Tuesday.

Tahsil.	Locality.	Market days.
Gorakhpur (Sadar)	Mundera	... Wednesday and Saturday.
	Chaura	... Monday and Friday.
	Pipraich	... Monday and Thursday.
	Gauri	... Tuesday.
	Bhawapar	... Sunday.
	Sewain Bazar	... Monday.
	Sahjanwan	... Tuesday.
Deoria	... Deoria	...
	Salempur	... Sunday and Thursday.
	Lar	... Ditto
	Barhaj	... Wednesday.
	Bhatpar	... Tuesday and Friday.
	Majhauili	... Saturday and Wednesday.
	Baikunthpur	... Sunday and Wednesday.

7. List of Fairs (important fairs only).

Tahsil.	Locality.	Name of fair.	Date.	
Padrauna ..	Bhanisaha ..	Debi Ji ..	Chait Sudi 9th and 10th	
	Mohana Dih ..	Durga Puja ..	Kuar Sudi 6th to 10th.	
	Khana Chapra	Ram Lila ..	Ditto.	
	Karahin ..	Sheoratri ..	Phagun Badi 13th.	
	Bansighat ..	Kartik Purnamashi.	Kartik Purnamashi to	
		Sheoratri ..	Aghan Badi 1st.	
			Baisakh Badi 13th.	
		Kubesthan ..		
		Kundwa Debi-patti ..	Kulkula Asthan	
		Tamkahi ..	Ram Lila ..	Chait Sudi 9th to 12th.
Bansgaon ..	Sarys Buzurg	Sheoratri ..	Kuar Sudi 1st to 10th.	
	Tharibhar ..	Chait Naumi..	Phagun Badi 13th.	
	Barhalganj ..	Kartik ..	Chait Naumi.	
	Gorakhpur..	Bahrobia ..	Sheoratri ..	Magh Badi 15th.
		Dumri II ..	Ram Naumi ..	Phagun Badi 13th.
Deoria ..	Tarkula ..	Ditto ..	Chait Sudi 9th.	
	Bahrampur ..	Syed Salar ..	Ditto.	
	Andhari Bagh	Easehra ..	1st day of Jeth.	
	Baikunthpur..	Dhanushjag ..	Kuar Sudi 10th.	
	Sohnag ..	Narhan ..	27th Nov. to 22nd Dec.	
	Bhagalpur ..	Ditto ..	2nd to 18th May.	
	Barhaj Bazar	Ditto ..	8th Nov.	
	Palkauli ..	Ditto ..	Ditto.	
	Ditto ..	Janam Ashtami	9th to 24th April.	
			21st July to 4th Aug.	
Mahrajganj	Adrauna ..	Durgaji ..	Chait Sudi Naumi.	
	Khutha ..	Dasehra ..	Kuar Sudi 9th.	

GORAKHPUR DISTRICT.

7.

8. Cattle census (1919-20).

Bulls	...	...	...	1,940
Bullocks	...	...	...	720,090
Cows	...	...	...	25,476
Calves	...	...	...	421,039
Buffaloes	...	...	...	6,721
She-buffaloes	...	...	...	136,617
Buffalo calves	...	...	...	176,836
Sheep	...	...	...	63,943
Goats	...	...	...	280,333

CHAPTER II.

DESCRIPTION OF, AND SUGGESTIONS FOR THE IMPROVEMENT OF, THE VARIOUS INDUSTRIES OF THE DISTRICT.

General.—With few exceptions the manufactures of the district are limited to the production of the simple necessities of rural life, and in these industries there is nothing which calls for mention. The weaving is confined to the production of coarse garha and doria for local consumption. In the city dhussa, a mixed fabric of cotton and wool, is woven to a small extent. The pottery is plain and devoid of decorations. Metal vessels are for the most part imported, though there are a few brass-workers at Gorakhpur, while Padrauna has a local celebrity for its vessels of the phool alloy. At one time embroidery was done on Sabar leather, but now the industry is almost extinct. Soap is manufactured at Gorakhpur to a small extent by the Hamidia Soap Factory. Ordinary washing soap is manufactured at Lar road, the bulk of which goes to Nepal.

But the chief industry of the district is the manufacture of sugar. There are five big mills working in the district, while one more has been set up at Bhatni. These are besides the small factories called "karkhanas" studded all over the district.

In addition to the above there is indigo manufacture for which there are five factories in the district.

1. Art Industries.

Embroidery.—Some ten years back there were about 12 families in Gorakhpur employed in embroidering Sabar for local consumption. The skins of deer, sambhar, chital and blue-bull were tanned with sal bark and given a rich reddish-brown colour. The leather was then embroidered with coloured silks. Small, round pillow cases 12 or 15 inches long embroidered with appropriate mottoes in Persian were made. Table covers, chair covers and prayer carpets called "Asani" and Jainamaz were also made, the last costing from Rs. 6 to

Rs. 10. This industry has gradually degenerated for want of demand. At this time there are some men who know to make these articles, but they have given up the business.

2. Building materials.

(a) *Bricks*.—In the city there are seven brick-kilns of the " Bulls trench " type, though the old pajawa system is still in practice in the interior.

Organization.—Luniyas mould 1,000 bricks for Re. 1-8. Zamindars charge heavy royalties (which reach up to Rs. 1,000) for the use of the land. One kiln can consume clay from two to three bighas of land annually. The site has to be changed from year to year. One kiln takes 3 lakhs of bricks at a time. Wood fuel is used ordinarily which costs Rs. 6 per 1,000 bricks fired. Coal is occasionally used, but it also costs about Rs. 5. Under favourable conditions a kiln yields 60 per cent. of 1st class bricks, 10 per cent. of 2nd class, 5 per cent. of 3rd class (hard) and 25 per cent. of 3rd class (inferior) bricks. But this is very uncertain and depends on the arrangement of the bricks in the kiln, and also on the skill of the fireman.

Bricks are sold in the city and delivered at destination. Allowance for cartage is made in the price. Carting charges are Rs. 2-8 per 1,000, and an octroi charge of 8 annas per 1,000 is also levied. Every kiln turns out about 25 lakhs of bricks every year.

(b) *Lime*.—Lime is obtained by burning kankar. Kankar is obtained at the pits at Rs. 10-8 to Rs. 11 per 100 c.ft. This includes carting charges for a distance up to 9 or 10 miles. About 1,300 c.ft. kankar is burnt at one time. The labourers are paid by daily wages of 3 to 7 annas per head, while mistris are paid monthly salaries of Rs. 15 or Rs. 16. About one-fifth of the kankar, put in the kiln for burning, is wasted. Grinding is done in bullock or buffalo driven stone mills at the rate of Re. 1-4 a day. The daily turn-out of grinding is about 20 maunds. The work is seasonal and is stopped in the rainy season. The Mufassil Bank Lime Mills use power for grinding kankar.

There are 4 kilns in Gorakhpur and each burns kankar 15 times in the year. Lime is sold at 12 annas per maund or per 2 c. ft. It includes carting charges of one anna per maund and an octroi charge of one pice per maund.

Annual outturn is about 60,000 c. ft. of lime. Lime is all sold up in the city. It is very seldom exported.

3. Chemicals.

(a) SALTPETRE.

(i) *Crude saltpetre*.—Crude saltpetre is manufactured by Luniyas. As salt is also produced the Northern India Salt Revenue department issues licences at Re. 1 a year. In the year under report 385 licences were issued. This work is carried on from October to May. A royalty of Rs. 10 to Rs. 20 per karkhana is charged by the zamindar for the nitrous earth taken from his estate. The process of manufacture is described in my Industrial Survey Report of the Azamgarh district.

The daily outturn of one karkhana is about 3 seers. The proportion of saltpetre obtained from the nitrous earth is 3 or 4 per cent. It is sold to the local refiners at Rs. 3-4 to Rs. 3-12 per maund. A Luniya earns Rs. 60 to Rs. 70 per karkhana annually. The workers do not depend on this work, but carry it on as a subsidiary work. Dried leaves gathered from the groves serve as fuel and cost nothing.

Total outturn is about 5,800 maunds annually, of which about 4,250 maunds is consumed by the local refiners and the rest is exported to Ballia, Ghazipur and Sonapur for refining.

(ii) *Saltpetre refining*.—There are three refineries in the district. They have obtained licences by the Northern India Salt Revenue department for keeping refineries on payment of Rs. 50 per refinery. They buy crude saltpetre from the local Luniyas and also import from the neighbouring districts, at Rs. 3-4 to Rs. 3-12 per maund. Crude saltpetre is stocked and the work of refining goes on throughout the year. They are worked on very small scale. The process of manufacture is the same as described in the Industrial Survey Report of the Farrukhabad district. In refining, saltpetre yields two qualities of saltpetre:—I Quality is called "refined saltpetre" or "Kalmi." This is obtained in proportion of 40 to 50 per cent. It sells at Rs. 9 to Rs. 10 per maund. II Quality is called "Kuthia" It is an inferior quality and is obtained in proportion of 15 to 20 per cent. It sells at Rs. 4 or Rs. 4-8 per maund.

Common salt is produced in proportion of 10 to 15 per cent. For this they have to pay a duty of Re. 1-4 per maund.

Munj and wood fuel are used which cost about 4 annas per maund of crude saltpetre. Two or three men are engaged on monthly salaries of Rs. 8 to Rs. 12 per month. For making the "Kuthia" saltpetre the factory owners give the solution, out of which refined saltpetre has crystallised out, to the Luniyas, who evaporate the solution to dryness and scrape off the deposit. In this process fuel costs Rs. 2 to Rs. 2-8 per maund. The factory owners pay Rs. 3 per maund of "Kuthia" saltpetre to the Luniyas, and in their turn sell it at Rs. 4 per maund.

The margin of profit in refining 100 maunds of crude saltpetre may be calculated as follows:—

Crude saltpetre 100 maunds ...	...	Rs.	350
<u>Fuel at 4 annas per maund</u> ...	...	...	<u>25</u>
Labour about ...	...	...	40
			415
	Total	...	415

This would give about 45 maunds of refined saltpetre (Kalmi) and 16 maunds of "Kuthia" saltpetre.

"Kuthia" saltpetre is bought from Luniyas for Rs. 48. The total outlay comes to (415 + 48), Rs. 463—

		Rs.	
Price obtained for 45 maunds of refined saltpetre at Rs. 10 per maund ...	...	450	
Price obtained for 16 maunds of "Kuthia" saltpetre at Rs. 4 per maund ...	...	64	
		514	
	Total	...	514

Profit comes to Rs. 51 or 11 per cent.

All the refined and "Kuthia" saltpetre is exported to Calcutta or Saran (in Behar). Local use is almost nil. Although it is said to be a good manure, especially for sugarcane crops, it is not utilised here as manure.

(b) INDIGO MANUFACTURE.

There has been a great falling off in the cultivation and manufacture of indigo in the Gorakhpur district. The system

of cultivation and manufacture of commercial indigo will be found described in Mr. Hadi's Monograph on Dyes and Dyeing and is not repeated here.

Some 15 years back indigo was grown in the estate of big landholders who made the manufacture pay with very economical management. But now there is a diminution in area on account of competition with synthetic dyes. There are eight Indigo Factories in the district, which are, with the exception of one, all owned by Europeans. The largest area is now held by the Bubnowlie Factory which is the biggest concern in the district and belongs to Mr. F. Mackinnon. The European planters of sugar grow indigo for the manure which they get in the form of used-up stems and leaves of indigo plant. It is said to be the manure for sugarcane crop.

In each of the factories power is used in the manufacture. They are busy for 2 to 3 months when temporary hands are engaged on piece wages. The indigo dye is made in the form of square cakes. Their consistency is measured in units by an analyst, and the price is charged according to the number of units. Each day manufacture of indigo is stored separately.

The indigo is all exported to Calcutta and sold through agents, of whom the chief is Messrs. J. Thomas & Co.

4. Food-grains.

(a) The following statement shows the approximate produce of the principal crops in the year 1921-22 :—

Name of crop.	Area. Acres.	Total produce. Maunds.
Wheat	210,301	3,785,418
Wheat and Barley ...	283,161	
Barley and Gram ...	108,583	
Barley	134,175	2,126,800
Gram	87,279	1,745,580
Peas	283,560	4,149,658
Linseed	68,476	417,536
Rape and Mustard ...	11,317	78,667
Sesamum (Til) ...	16,757	57,220
Rice (early)	690,083	13,458,030
„ (late)	207,119	
Maize	100,128	1,221,073
Arhar	9,342	79,750

Name of crop.	Area.	Total produce.
	Acres.	Maunds.
Cotton	280	280 (cleaned).
Indigo	3,240	61,560 (dye).
Sugarcane	152,851	382,127,500 (manufactured gur).
Sanai (Hemp)	1,497	8,982

(b) *Dal splitting*.—This work is carried on at Chauri Chaura on a very large scale, and also at Sahjanwa and Barhaj Bazar to a certain extent. At Chauri Chaura every family is busy with this work. Arhar is the only pulse split. Arhar is mostly imported from the neighbouring districts of the west, such as Basti, Gonda and Bahraich. The amount of imports of arhar reaches up to 2 lakhs of maunds. Work is done entirely by hand. No power is used. Arhar is purchased for a whole season and stored by for a whole year. Its average price is Rs. 3-10 per maund. There is a wastage of 2 seers per maund in cleaning and drying. One maund of arhar gives 28 seers of dal, 4 seers of husk, 5 seers of khudi (broken pieces) and 1 seer of khanda (larger broken pieces). Women and children are paid 2 annas 6 pies each per day and men 4 annas. Dal is exported to Benares and Calcutta and sold at Rs. 5-4 per maund. It is stored by the factories if prices are unfavourable. Husk, khudi and khanda are also exported to Benares. Khudi is ground into flour and used for feeding cattle. The quantity of exports of dal from Chauri Chaura exceeds 2 lakhs of maunds.

Suggestions.—There are three oil-mills in Chauri Chaura worked with big steam engines. It would be worth their while to put up a dal splitter along with the kolhus and Flour Mills. There is a great scope for power splitting. I understand that Sirdar Kirpal Singh Saheb of Saraya is thinking of taking up this work. There is an extensive use of gram for horses. The crushing of gram and splitting of peas by power should also be tried.

(c) *Flour Mills*.—In addition to the Mufassil Bank Flour and Lime Mills in Gorakhpur there are eight wheat grinding mills in the district. They all do job work and on commission, and none of them grind wheat for export, nor do they keep any stock of wheat or flour. Small consignments below 2 maunds each, are charged at the rate of 8 annas per maund. For larger

consignments the charge is at wholesale rate of five annas per maund. In the latter case they also undertake to provide conveyance at their expense from and to the consigners' house. For this purpose most of the mills engage four thelawalas and pay them Rs. 10 each. These thelawalas bring wheat in bags from the consigners (mostly banias) to the mills. Wheat is also cleaned on the millers' account, and after grinding again sent back to them.

Mufassil Bank Flour and Lime Mills, Gorakhpur.—This mill has been opened under the management of the Gorakhpur Mufassil Bank. They have got a steam engine of 29 N. H. P. and have got five grinding mills of which three do regular work. They have also attached a lime grinding mill to the plant. For this purpose they burn kankar into lime themselves.

5. Hardware.

(i) Brassware.

There are 25 families in Padrauna and two in the city for making brasswares—in all 27. *Lotas* are manufactured by 11 factories and *thalis* by 16. It is a very ancient industry in Padrauna, but now it is in a decaying condition.

The Padrauna people make *phul* brass themselves by mixing copper and *ranga* (zinc) in the proportion of 4 : 1, while the city men get *phul* from the dealers in the form of old and broken vessels. *Batulis* are made of *kans* and the other vessels of *phul*.

Padrauna brass workers turn out :—

(a) *Lotas*.—Moulds are made of earth which is obtained from cartsmen and paid at the rate of 8 annas per cart load by the artisans. This suffices for moulds for 2 maunds of brasswares. Each family engages one man at Rs. 7-8 per month for doing extra work. In melting one maund of *phul* about 4 seers are wasted in melting and 5 seers in turning and filing, but the latter is utilised. *Phul* is made by melting together copper and *ranga* (4 : 1) which costs Re. 1 and Rs. 4 per seer respectively. About 5 seers of wax (costing Re. 1-4 a seer) suffices for filling the moulds of one maund of vessels. Half of it is wasted and half re-utilised. The workmen work for the dealers who pay them Rs. 30 per maund. This covers the wastage of *phul* and wax and other charges such as fuel, etc. Fuel costs Rs. 6 a maund. *Phul* wares are sold at Rs. 2-8 per seer.

The margin of cost of labour of the artisans may be calculated as follows :—Every family turns out 2 maunds of lotas every month and thereby gets Rs. 60 from the dealers. The expenses incurred are as follows :—

	Rs.	a.	p.
Eight seers loss in weight of phul cost	13	0	0
Fuel	12	0	0
Servant's pay	7	8	0
Two and a half seers of wax wasted	3	2	0
Earth for moulds	0	8	0
Total	36	2	0

Cost of labour per month comes to Rs. 23-14-0.

The dealer's profit is calculated to be Rs. 6 per maund.

(b) *Thalis*.—The workers are supplied raw materials by the dealers and are paid by piece-work of 10 annas per seer. Broken vessels, that are generally used, cost Re. 1-4 per seer. They melt one maund of phul in one operation and obtain 36 seers of usable alloy which loses another 6 seers in working. For hammering they engage 10 men on daily wages of 12 annas each, who can beat out about 32 thalis a day. Every family turns out 4 maunds of phul into thalis per month. The wages that they are paid covers the cost of loss in weight, fuel, etc. Fuel required for one maund of phul costs Rs. 7-8 (wood Rs. 4 and coal Rs. 3-8). Thalis are sold at Rs. 2 to Rs. 2-4 per seer.

The cost of labour can be calculated as follows :—

Monthly outturn is of 4 maunds for which they are paid Rs. 100. The expenses incurred are :—

	Rs.	a.	p.
Wastage of 16 seers of phul cost ...	20	0	0
Fuel	30	0	0
Wages paid for hammering about ...	22	8	0
Total	72	8	0

Monthly earnings come to Rs. 27-8.

Dealer's profit is calculated to be 2 to 6 annas per seer.

Marketing.—Utensils are sold in retail by the dealers, the principal market being Nepal.

At Gorakhpur the work is carried out on similar lines, but the wages are at Rs. 40 per maund in place of Rs. 30 per maund paid at Padrauna.

(ii) *Steel Trunks*.—Trunk manufacture in Gorakhpur dates from long ago, but within the last three years three factories have been organized which manufacture steel trunks, tin trunks, etc., and have replaced the imports of trunks from Allahabad and Benares. In the beginning a few trunks used to be made out of empty kerosine oil tins, but now trunks of good quality are made out of galvanised iron sheets, which are not much inferior to those manufactured at Allahabad.

Galvanised iron sheets are imported for steel trunks from Allahabad and Cawnpore at Rs. 12 per maund. Empty tins of kerosine oil are purchased locally for tin boxes at Rs. 15 per 100. Tins which have been used for storing molasses are mostly purchased from Gauri Bazar and Captainganj. Aligarh locks and handles are mostly used; foreign ones are used only occasionally. The former cost Rs. 2-12 per dozen, while the latter cost about 12 annas per lock and 8 annas per pair for handle.

This industry gives employment to about 18 men who are paid by piece-work. For making tin-boxes they get 4 annas per box and for steel trunks they get from 10 to 12 annas. For painting they have got permanent hands and pay them Rs. 8 to Rs. 12 per month.

These trunks are sold in the city. The manufacturers have got retail shops. The trunks are also taken to big melas such as that of Ajodhia or Sonapur for sale.

Their prices are fixed as follows :—

Tin trunks ... one anna per inch.

Steel trunks ... 2 to 4 annas per inch.

The cost of manufacture of a good steel trunk of 27 inch size can be calculated as follows :—

			Rs.	a.	p.
Iron sheet costs	...	...	3	12	0
Locks and handles	...	...	1	4	0
Wages	...	...	0	12	0
Colour	...	...	0	8	0
Total	...	...	6	4	0

Sold at 4 annas per inch for Rs. 6-12. Profit 8 annas.

6. Leather.

About 19,600 maunds of hides and 14,550 maunds of skins are exported from the Gorakhpur district to Cawnpore and Calcutta every year. No tanning is done here. Chamars tan hides by the bag tanning process, and prepare a leather which is used in the manufacture of ordinary shoes of Indian pattern, irrigation buckets and water trunks. All the tanned leather required for making shoes and, all leather articles of superior quality come from Cawnpore and Agra. The octroi statements show that Rs. 56,174 worth of leather and leather articles were imported in the city in the year 1921-22.

There are two shoe-making shops in the city which make out boots and shoes of good quality, but the major quantity of boots and shoes are imported for local consumption. They engage seven to eight workmen each and pay them at 12 annas to Re. 1-4 per pair of shoes. The sale price of shoes is as follows :—

		Rs.	a.	p.	Rs.	a.	p.	
Chrome	...	6	8	0	to	9	0	0
Calf	...	4	0	0	to	6	0	0
Canvas	...	3	8	0	to	4	4	0

The sale is entirely local.

7. Miscellaneous.

(i) *Soap making.*—There is a Soap Factory in the Gorakhpur city named the Hamidia Soap Factory which turns out toilet, medicated and washing soaps of good quality. Neem, Carbolic, Turkish Bath, Red Light, Bar and other brands of toilet soaps are made. It has patented the "Red Light soap." It is made of the same kind and in competition with the Sunlight soap, so popular in every house. Soaps are made by both hot and cold processes. Mahua, castor and cocoanut oils are used. Card-board boxes are made by the factory itself. The sale is both local and foreign. Soaps are exported to Ballia, Azamgarh, Chupra and other districts. They have also been sent to Calcutta and Karachi.

In addition to the above factory there are four other small firms in the village Lar (tahsil Deoria) which turn out ordinary

washing soaps called "dhobi soap." It is made by the cold process and consists in heating the oil in a pan and then gradually adding saji and lime, while the whole is constantly stirred with a rod. When cold it is rolled in small round balls. Neem and mahua oil are used and are imported from Benares. Sajji is imported from Jaunpur. Lime and fuel are obtained locally. The work is carried on from September to December only. This soap is made mostly for the Nepalese markets whence dealers come in winter and take it away to their country where owing to scarcity of washermen soap is used in almost every household. It is sold at Rs. 18 per maund. The soap maker engages three men on daily wages at 4 annas each.

(ii) *Jail industries*.—The factories of the Gorakhpur Jail were closed for a whole year, as the trial of the Chauri Chaura case took place in the factory buildings.

(iii) *Forest produce*.—The forests in this district are of great economic value, although they are far less extensive now than before. The area of Government forests is 176½ square miles, split up into 14 detached blocks and demarcated by means of serially numbered monoliths. The most valuable crop is the Sal (*Shorea Robusta*) and covers in all about 105 square miles. It is found in an almost pure state with only a light admixture of its companions, viz., Asna, Haldu, Jamun, etc. The bulk of the crop consists of poles (ballis) and saplings which are generally straight and sound. In the grass lands on the edges of the sal blocks there is a somewhat abundant growth of Asna (*Terminalia Tomentosa*). The Jamun (*Eugenia Jambolana*) grows freely along the banks of the watercourses, and the only other serviceable trees are Khair (*Acacia Catechu*) and Haldu (*Adina Cardifolia*). Plantations of Shisham (*Dalbergia Sissoo*) have been started in some blocks. The area covered by Khair is about one square mile. Some three years ago Khair was sold by auction to the Khair extractors of Bahraich district who cut the trees indiscriminately and thereby injured the whole plantation. The auction of Khair has therefore been stopped and plantations have been started.

Apart from the Government reserves there are about 75 square miles of jungles and forests in the possession of private owners. The bulk of such land lies in the Maharajganj tahsil.

Every year plots are marked in the forests that are to be put to sale in that year. With the exception of hides, all minor and major products are sold by auction on the lump sum system. Every contractor has to bind himself to the forest authorities to supply a fixed number of sleepers for the use of Railway Companies at a fixed rate. The sal wood is used only for making sleepers or as timber. Wood-cutters charge from Rs. 2-8 to Rs. 3-8 for felling 100 trees and separating their branches from trunks. The bark is separated from the trunks and the logs are taken to and stored at the contractor's outposts near a railway station.

The branches of sal wood and other trees are cut into small pieces and arranged in chattas for public sale. Each chatta measures 20 × 5 × 5 c.ft. and sells at Rs. 40. It is used as fuel wood. Chatta makers get from Rs. 3-8 to Rs. 4 per chatta.

The area covered by grass and other minor products such as bamboos, etc., is about 75 square miles. They are sold by auction. The grass is used by neighbouring villagers for thatching their houses, but its supply is said to be insufficient even for the needs of the residents of the neighbouring villages, and its export is not convenient. Fodder grass is consumed for local use. The zamindars, etc., are allowed to graze their cattle in pasture land on payment of 8 annas per head of cattle, and on condition that if any cattle died within the reserve area its hide would be the property of the Forest department.

There are no herbs, nor are there any medicinal plants of value in these forests. No proper and regular search has been made for them, but they are not likely to be found in sufficiently large quantities so as to warrant a search.

(iv) *Bristles*.—There are about 200 families of khatiks in Barhalganj, Barhaj Bazar and other neighbouring villages who export pig bristles to Allahabad, Cawnpore and Jubbulpore where they are used for making brushes. They go about from village to village in the districts of Basti, Azamgarh, Gorakhpur and the neighbouring districts of the Behar Province and buy bristles from the local khatiks at Rs. 3 to Rs. 3-4 per seer, which they sell at Rs. 5 per seer. Their touring expenses nearly come to Re. 1 per seer. Pigs are clipped once in the year during winter. Each pig yields on an average about 2 tolas of bristles. It is estimated about Rs. 40,000 worth of bristles are exported every year from Barhalganj and Barhaj

Bazar. Railway fare from Dohrighat (Barhalganj) to Cawnpore is Rs. 3 per maund and to Allahabad Rs. 2 per maund.

(v) *Bengal and North-Western Railway Company's Loco. Works.*—This is said to be one of the best equipped workshops in India where new wagons, carriages and engines are built and old ones are repaired. Engine fittings, wheels of all kinds and other important accessories are all imported from England and fitted locally. Boilers are made from thick copperplates and are fitted up in the workshop. For carriages wheels, girders, springs, etc., are imported and the rest made here. Nuts, bolts, joints and other sundries are made here. They do not undertake outside orders, only railway requirements are supplied.

(vi) *Fisheries.*—Fishing is carried on in almost every *tal* in the Gorakhpur district on a scale varying with the size of the tank and the presence of fish in it. The bigger *tals* are given on annual contracts. Mallahs and Kewats as a class catch fish. The common varieties are Rohu, Parhin, Tengan, Lachhi and Jhinga.

The method of catching fish and instruments are :—

1. Nets—

Maha jal, size	...	150 ft. × 60 ft.
Hand jal	...	12 ft. square.
Jhinguri	...	18 ft. × 8 ft.
Bisuri	...	10 ft. × 15 ft.

2. Line (shisht) ... } Lines are made by the Mallahs to
which J like hooks are attached
at the end.

3. Hooks ... }

4. Bansā ... Many thin bamboo sticks ending
in iron spikes are fastened at
one end and loose at the spiked
end.

5. Khaura ... Long thin strips of bamboo or
reed are fastened like tattis and
put across running water.
Small fish are left behind,
while the water flows through.

A contractor of *tal* usually employs Mallahs and Kewats who bring their boats and nets and get half of their catch and one meal wages. The fish is sold on the spot to the Khatiks

and Kunjras who visit *tals* for making purchases. Fish is hardly exported to other districts, excepting that the fish caught in villages situated on Nepal borders is sold in the neighbouring villages of the Nepal State.

8. Oil.

The district produces the following oil-seeds :—

Oil-seeds.	Acres.	Production. Maunds.
Sesamum (Til) ...	16,757	57,220
Rape and Mustard ...	11,317	78,667
Linseed ...	68,476	417,536
Total ...		553,423

The oil-seeds are crushed in the district in ordinary wooden kolhus similar to those seen in other districts. The capacity of such kolhus is 10 seers a day—4 ghanies of $2\frac{1}{2}$ seers each, but on average only 3 ghanies are crushed daily. According to the census of 1911, there were 3,586 actual working Telis in the district. Judging from this it is estimated that Telis consume about 2 lakh maunds of oil-seeds.

Besides these there are three oil mills in Chauri Chaura that crush different varieties of rape and mustard. A fourth mill is also in the course of erection. Two hydraulic presses of 18 plates each have been attached to the Saraya Sugar Mills by Sirdar Kirpal Singh Majithia. The presses have been tried once, but do no regular work at present. Their capacity is 80 maunds daily. Some two years ago an oil mill belonging to Babu Harakh Chand was working in Barhaj Bazar. It has now stopped work. It is said that the mill failed on account of mismanagement.

I. Cottage Industry.—According to the census of 1911 there were 3,586 families doing this work. Each family usually crushes 3 ghanies (on an average) of $2\frac{1}{2}$ seers each daily, and so their daily earnings can be calculated as follows :—

Price of $7\frac{1}{2}$ seers of oil-seed at 6 seers a rupee	Rs.	a.	p.
...	1	4	0
This produces $2\frac{1}{2}$ srs. of oil sold at $1\frac{1}{2}$ srs. a rupee	...	1	10 0
5 seers of oil-cake sold at 2 annas a seer	...	0	10 0
		2	4 0
Cost of keeping a bullock, daily	...	0	4 0

This gives an income of 12 annas daily.

The oil is sold in the neighbouring markets on market days. Rape and mustard are mostly crushed, but linseed is also crushed when the supply of the former runs short. Generally oil-crushing is done for 25 days in a month. On an average a Teli earns about 12 annas a day.

II. Oil Mills.—The three oil mills in Chauri Chaura have also got wheat grinding machines attached to their plants. The kolhus of the mills are ordinary wooden kolhus which are replaced by new ones every two months or earlier. Each kolhu crushes six ghanies of 10 seers each a day, but in the oil mills of Behari Mahadeo Prasad each kolhu crushes from 7 to 8 ghanies a day as their engine is more powerful than that of others. When the wheat grinding machine is working they have to stop 6 kolhus for it. The oil is exported to Benares, Bengal and the Punjab and sold through agents who charge a commission of 1 per cent. on the sale price. Price fluctuates very much, it being something about Rs. 21 per maund on average. The oil-cake is also exported to Benares where it is sold at Rs. 2-8 a maund. The local people are a bit prejudiced in buying the cake for feeding their cattle, for it contains less traces of oil.

One more oil mill is in the course of erection in Chauri Chaura. Chauri Chaura still exports more than 28,500 maunds of rape and mustard every year, and the new mill has been erected in order to catch this export.

The oil-presses of Saraya Sugar Mills have a great capacity, but they do no regular work on account of transport difficulties. There are 3 miles of *katcha* road from Saraya to Chauri Chaura railway station and it is in such a deplorable condition that it is a mighty job for a bullock cart to cover that distance. This has put the proprietors of the mills in a great fix, for they have also got a sugar mill in Saraya and have to cart sugarcane from the railway station and have to pay heavy carting charges.

A *katcha* road runs from Chauri Chaura railway station to Pipraich passing through Saraya. All these three are great centres of industrial activity. Chauri Chaura has 3 oil mills and is a very big-grain market. Pipraich is a great market for raw sugar and molasses while Saraya has a sugar and an oil mill. Though Pipraich is also a railway station, the traffic between these places is mostly through this *katcha* road, and so

Saraya and Pipraich both suffer because the *katcha* road is difficult to pass in ordinary season as a major portion of it is sandy. During the rains it becomes almost impassable and the Saraya factory has had to make a special road for its own use. It will be a great advantage to Pipraich and Saraya if the road could be metalled. It is hoped that the Pipraich trade will improve thereby and the discount on the Saraya Mills will be removed.

9. Textiles.

A. COTTON.

This district produces 280 maunds of cotton in 230 acres. Notwithstanding the impetus given by the swadeshi movement, the spinning of cotton is so insignificant as to be unworthy of note. The whole of the yarn required is imported from Cawnpore and Ahmedabad. Coarse cotton cloth, mostly garha, is woven by Musalman julahas. The number of actual workers engaged in 1911 in weaving and sizing was 3,059 males. It is estimated that there are about 1,000 looms in the district. The following villages have the greatest number of workers :—

1. Barhalganj	about	...	200 families.
2. Piprapur	"	...	90 "
3. Purana Gorakhpur	"	...	100 "

They generally prepare garha and lungis.

Garha.—Generally $11\frac{1}{2}$ to $18\frac{1}{2}$ counts of yarn are used. In a fabric known as "Sahan" only $18\frac{1}{2}$ counts of yarn are used in both warp and the weft. Its piece-length is 12 yards and width 28 inches. A family can turn out three such pieces in a week. It is sold at Rs. 6 per piece. One bundle of $18\frac{1}{2}$ counts is sufficient for three pieces of Sahan. And so the daily earnings of one family can be calculated—

		Rs.	a.	p.
Cost of yarn (1 bundle $18\frac{1}{2}$)	...	11	0	0
Cost of mari, etc.	...	1	0	0
		<hr/>		
Total	...	12	0	0
3 pieces sold at Rs. 6 each	...	18	0	0
Weekly earnings	...	6	0	0
or daily	..	0	14	0

Lungis.—Mostly 20 and 24 counts of yarn are used. Lungis are made in piece-lengths of 13 yards, separated in four equal parts. Width is 44 inches. They are woven from 5 to 6 yards a day. In this case the daily earnings of one family come to about 10 annas a day. Lungis are sold for Rs. 7 to Rs. 8 per piece.

The sale of the cloth is for the most part local. Lungis are generally taken by headmen of the families to the Bengal districts. Garha is for the most part sold locally, but a little is also exported through local dealers.

In addition to the cottage workers there are the following weaving factories :—

(i) *The Salvation Army Criminal Tribes' Settlement, Jitipur, Gorakhpur*.—This is a settlement of the criminal tribe of Doms. Most of them are employed in the municipality as scavengers, but some of them are also engaged in handloom weaving, while women help in the preliminaries and do embroidery and drawn-thread work. They turn out dusters, towels, bed-sheets, table covers, swabs, etc. They also manufacture durries to order. Forty-three men are working in the industrial section—33 in handloom weaving and 10 in durrie making. The weaving master is paid Rs. 30 per month and the carpet-weaving master Rs. 12 per month.

Looms and warping machines which are used are of the Salvation Army pattern. To obviate the necessity for sizing double or twisted yarn is used and it is imported from Cawnpore. There are two men for warping—one is paid 3 annas a day, while the other is paid from 5 to 10 annas for a warping of 118 yards. Women who fill the bobbins are paid at 1 to 2 annas per lb. of yarn. Prices of articles vary and are given in Chapter IV.—Statistics.

In durrie weaving only 10 counts of yarn is used. Plain durries are woven at the rate of 3 yards a day, while striped and flowered ones from 9 inches to one foot a day. The former are sold at Rs. 3-12 per square yard, while the latter go higher.

Usually profit is calculated at 3 annas per rupee on the cost price. For every kind of cloth the cost of labour is fixed, e.g., for dusters the wages are 12 annas per dozen. The sale is done as under :—

(a) Direct sale on the spot in their retail shop

(b) Through the Bareilly Salvation Army Dépôt. In this case the profit is equally divided between the Jitipur and the Bareilly dépôts.

At present the Settlement has accumulated large stocks and have therefore cut down the manufacture.

(ii) *Sheikh Murtaza Husain's weaving factory.*—There are 3 fly-shuttle looms in this factory on which 3 men work. Articles made are garha, twill, dosuti, and towels. Mill yarn from 15 to 20 counts is used, and is obtained from local dealers. For warping and sizing of 24 yards, they pay Re. 1-4 including *mari* charges. Five to 7 yards of cloth is woven in a day on one loom. They pay four annas per piece for bleaching and calendering.

Cloth.	Size.		Sale price per piece.		Length woven in one day on one loom.
	Length.	Width.			
	Yds.	Inches.	Rs. s. p.	Rs. s. p.	Yds.
Garha ..	12	28	5 12 0	to 6 8 0	6 to 7
Twill ..	8½	28	5 0 0	„ 5 8 0	4 „ 5
Dosuti ..	12	28	5 12 0	„ 6 8 0	6 „ 7
Towel ..	36 inches	28	0 8 0	each.	9

The profit in each case generally comes to about 22 per cent. of the sale price. Marketing is done by making direct sales on the spot. The cloth is sometimes exported to Benares and Darjeeling.

(iii) *Mahadeo Prasad's Khaddar weaving factory.*—There are 5 throw-shuttle looms in this factory. This factory turns out khaddar of handspun or handspun and mill yarn combined. Yarn is obtained from the dealers at Re. 1-12 per seer. The factory has five weavers and each is expected to weave 4 to 5 yards of cloth. Two women are engaged for filling bobbins and are paid Rs. 8 per month each. For warping and sizing they have to pay Re. 1-4 for 32 yards. Pure desi khaddar is sold at Rs. 5-6 per piece of 9 yards (width 36 inches). A piece of 9 yards of khaddar having handspun yarn and mill yarn 18½s combined is sold for Rs. 5-12. The profit is about 21 per cent. of the sale price. The cloth is sold in the retail shop which the owner has in the city.

Suggestions.—The weaving industry seems to be declining. Sales are limited and stocks are accumulating. Sales have to

be made on competitive prices. Generally the weavers take yarn from the dealers on credit and are bound to sell their finished articles to them, usually at a cheaper rate. In this way they remain always indebted to the dealers, and have to accept a lower price for their manufactures. A co-operative society is very badly needed, specially for the benefit of those living in the suburbs of Gorakhpur. A credit society is being tried at Piprauli, but in view of the present strict orders of the credit societies this cannot much help the weavers. A special industrial organization is needed. A sound and better training is their second need, so that they may learn to turn out cloths other than garha and lungis. The city of Gorakhpur is badly in need of a weaving school. Last year it was arranged between the Director of Industries and the District Board that a peripatetic weaving school be opened in the city. But the opening of the school was postponed pending the publication of the report of the Maqbul Husain Committee on handloom working. The report has since been published, the question had better be reconsidered now. An opening for clearing the stocks has also to be found.

B. WOOL.

According to the cattle census of 1919-20 there were about 63,000 sheep in the district. They are clipped twice in the year, and so it is estimated that about 1,000 maunds of wool are obtained in the district. Of this about 200 maunds are utilized by the two blanket weaving factories of Gorakhpur city and about as much by the Gadariyas who are 76 in number according to the census of 1921 and who manufacture ordinary coarse blankets. About 600 maunds of wool are exported to Cawnpore. Pattis or strips of 9 inches width are woven by the Gadariyas and six such pattis are sewn together to make a blanket $2\frac{1}{2} \times 1\frac{1}{2}$ yards in size. This would sell at Rs. 3-8 to Rs. 4. The blankets are sold in the local and neighbouring markets.

Blanket weaving.—Two factories in the city make pure wool blankets and dhussa of mixed cotton and wool. The latter are coarse and in white and black, or white or brown checks. About 200 maunds of local wool is obtained from Gadariyas. Sometimes wool is also imported from Cawnpore and Jhansi at Rs. 30 to Rs. 35 per maund. Ordinary throw-shuttle looms

are used. Wool is carded by the local Dhunias at 8 seers a rupee. The spinning charges are 6 annas a seer. Warping is done by the weavers themselves. Wheat flour or rice is used for sizing. Pure wool blankets are made in strips of 30 inches wide. Two such strips are then sewn together and milled, i.e., kneaded with feet by dipping in and washing with water. Mixed cotton and wool blankets are woven of 54 inches width. Piece-wages prevail, weaving and kneading charges being 6 annas and 3 annas for each blanket respectively. Usually 54 inches wide and 3 yards long blankets are prepared. One blanket weighs $2\frac{1}{2}$ seers. There is a wastage of 16 to 20 per cent. of raw wool in carding and spinning. The cost of making one blanket can be calculated as follows :—

	Rs.	a.	p.
Price of raw wool (3 seers)	...	2	4 0
Spinning charges	...	0	15 0
Carding	...	0	6 0
Weaving	...	0	6 0
Milling	...	0	3 0
Total	...	4	2 0

In one day 28 yards of pure wool strips (30 inches wide) or two blankets are woven on one loom and 3 blankets are milled.

The cost of production of mixed cotton and wool blankets is the same as that of pure wool ones, but the designs of the former are very attractive and the texture uniform. The sale price of these blankets is Rs. 4-8 to Rs. 5 each, and the profit comes to 6 to 14 annas per blanket.

Blankets are mostly taken to Calcutta and other cities of Bengal for sale. Local sale is insignificant. Occasionally dealers come from Bengal to purchase them.

10. Wood work.

The district has the following activities in wood work :—

1. Furniture making.
2. Palanquin making.
3. Turnery and lacquer work.
4. Bamboo work.

1. *Furniture making.*—There is only one firm of Sheikh Nakchhed, where chairs, tables, stools, etc., are made. Shisham wood is used and is available locally. Generally entire trees are bought which cost Rs. 20 to Rs. 100 according to the dimensions of the trees, or timber is purchased in the form of sleepers.

The capital invested is Rs. 8,000. The District Board and the courts patronise this firm. Ten skilled carpenters are employed. Ordinary tables and chairs are made for public sale, but other articles are made to order. Profit is marked at the rate of 3 annas per rupee on the cost of manufacture. Sale is entirely local.

2. *Palanquin making.*—This is a long established industry of this place. There are about 25 families of carpenters who make palanquins in addition to other articles of daily use. Shisham, sal or mango wood is used, tun is only occasionally used. They are sold for Rs. 8 to Rs. 65 per palanquin. Palanquins of superior quality are made to order. The wood required is obtained locally. These palanquins are sold on the spot to persons visiting the place from the neighbouring district, and also from Pilibhit, Bara Banki and Benares. The cheaper ones are mostly purchased by Hindus to be given away to Brahmans in performing the last services to their dead relatives. Varnishing and painting is done by local *rangsaz* on payment of Re. 1-8 to Rs. 4 per palanquin. Canning is done by local men at a charge of Re. 1-8 to Rs. 2 per palanquin.

3. *Turnery and lacquered work.*—A certain amount of turning is done in the Gorakhpur city by 13 Musalman families who have 29 wooden lathes among them. They make dholaks (tom-toms), dibias (small covered caskets), tambourine frames (khanjris), etc., of mango wood. The wood is bought from the local dealers. Each carpenter engages one man to work a lathe and pays him 3 to 4 annas a day. Generally two men work on one lathe—one does the turning and the other shapes the wood. A varnish made of shallac and various aniline colours is applied to the outer surface of these articles which gives them a beautiful and attractive appearance. Shellac is imported from Benares at Rs. 3 per seer. These articles are sold locally and also exported to Patna, Chupra and Calcutta. The sale takes place mostly in melas by *dafalis*.

Suggestions.—It would give an impetus to this industry if they were to make lacquered, turned, bed-posts, toys, dishes and similar other articles, which being articles of greater utility will find a good local sale.

4. *Bamboo work.*—There are 16 families of Bansphors who do this work. Bamboos are had from the suburbs of the city at the rate of two for a rupee. Such bamboos are 24 to 30 feet in length. Chicks, baskets, mats, fans and numerous other things are made. Out of one bamboo four chicks of door size are made and sold at 8 to 12 annas each. Mats are sold at Rs. 2-4 per 100 sq. ft. Family members help in the manufacture. The daily earnings of a family is estimated to be 10 annas to Re. 1. All these articles are sold in the city by the workmen themselves.

Suggestions.—About 150 acres of cane is available in the Padrauna tahsil. It would be worth their while if they tried to make mondhas and wicker furniture and sundries; for they can have a good sale in the city.

CHAPTER III.

INDUSTRIAL POSSIBILITIES.

1. *Dal splitting*.—About 2 lakh maunds of dal are exported from Chauri Chaura. There is a vast room for power-splitting. The requisite power for the work can be obtained from what can be spared by the 4 oil mills in Chauri Chaura. It will certainly pay to utilise power in splitting.

2. *Rice hulling*.—A large quantity of paddy is annually exported from the district. Rice may be made and exported instead. It would be advisable to start dal splitting and rice hulling together.

3. *Bone-meal*.—An enormous amount of bones reaching up to about 50,000 maunds are exported from the district. The possible and most useful opening for products which can be made from this material is for bone-meal for manurial purposes. Sugarcane growers of the district can get a valuable and cheap fertilizer at their door. But perhaps for its introduction among the cultivators the co-operation of the Agricultural department will be very necessary.

4. *Oil pressing*.—Though there are four oil mills working in Chauri Chaura, there are still $1\frac{1}{2}$ lakh maunds of oil seeds which are exported at present from the district and will be available for a new oil mill. So far as pressing of oil is concerned success may be counted upon with proper work.

5. *Power-sawing*.—Gorakhpur has got a vast area of sal forest (about 250 square miles) of which about 10 lakh c.ft. of timber wood is cut every year. About 2 lakh of sleepers are supplied to the Railway Companies. Sawing by mechanical power should prove more profitable than by doing it with hand as at present. The best place would be Kusmhi or Campierganj, which lies in the forest area.

CHAPTER IV.

STATISTICS.

1. Building materials.

(a) Bricks.

There are seven brick kilns of the Bull's trench system.
Raw material.—Earth. Royalty of Rs. 1,000 per kiln is charged.

Labour.—Every kiln owner keeps :—

1 clerk at Rs. 20 per month.

1 mistri at Rs. 40 per month.

4 firemen at Rs. 18 each per month.

4 men to lay bricks in the kiln at Rs. 18 per month each.

For other kinds of works piece-wages are given.

Moulding *kachha* bricks, Re. 1-8 per 1,000.

The laying of bricks costs Re. 1-4 per 1,000.

Annual outturn.—The work continues for only 8 months in the year. Outturn is about 15 lakhs per kiln or 105 lakhs for the district.

Prices.—The following are the prices for different kinds of bricks :—

			Rs.
1st class	...	...	16 per 1,000.
2nd "	...	...	15 " "
3rd " (hard)	...	...	15 " "
3rd " (inferior)	...	...	13 " "

Cost.—Cost of manufacture of 1,000 bricks :—

		Rs.	2.	p.
Cost of moulding <i>kachcha</i> bricks	...	1	8	0
Cost of laying in kiln	...	1	4	0
Cost of sand, etc.	...	0	4	0
Cost of fuel	...	6	0	0
Carting charges	...	2	8	0
Octroi charges	...	0	8	0
Total	...	12	0	0

				Rs.
Cost of manufacture of 15 lakhs of				
bricks	...	...	...	18,000
Royalty	...	...	...	1,000
Establishment and other charges	...			1,700
			Total	20,700
Price received from sale of 15 lakhs of				
bricks	...	...	...	22,875

Profit.—Rupees 2,175 or Re. 1-8 per 1,000 bricks.

(b) *Lime.*

Number of kilns.—4.

Raw material.—Kankar.

Quantity.—About 78,000 c.ft.

Value.—At Rs. 10-8 to Rs. 11 per 100 c.ft.

Labour—

(1) Mistris are paid Rs. 15 to Rs. 16 per month each.

(2) For loading the kiln women and children are paid 4 couris per basketful.

Outturn.—60,000 c.ft. of lime.

Cost of manufacture of lime :—

				Rs.	a.	p.
Kankar, 100 c. ft.	...	...	...	10	8	0
Fuel	...	...	...	6	0	0
Skilled labour	...	...	...	3	0	0
Unskilled labour	...	...	...	2	0	0
Carting charges	...	...	...	2	8	0
Grinding	...	...	...	2	8	0
			Total	26	8	0

This would give 80 c.ft. of lime which sold at 12 annas per 2 c.ft. will bring Rs. 30.

Profit for 80 c.ft. comes to Rs. 3-8 or Rs. 4-6 per 100 c.ft

2. Chemicals.

(a) *Saltpetre.*

(i) *Manufacture of crude saltpetre (year 1921-22).*

Number of licences issued.—385.

Licence fee.—Rupee 1.

Royalty.—Rupees 10 to Rs. 20 per karkhana.
Outturn.—About 3 seers daily per karkhana.
Total outturn.—About 5,800 maunds.
Sale price.—Rupees 3-4 to Rs. 3-12 per maund.
Local consumption.—About 4,250 maunds.
Exported quantity.—1,650 maunds.
Place of consignment.—Ballia, Ghazipur and Sonapur.
Income.—Rupees 60 to Rs. 70 per head annually.

(ii) *Saltpetre refining.*

- Number of refineries.*—3.
Raw material.—About 4,500 maunds of crude saltpetre at Rs. 3-4 to Rs. 3-12 per maund.
- (a) *Refinery at Jamsara (belongs to Gokul):—*
Consumption of crude saltpetre.—1,275 maunds.
Number of hands.—Three : paid at Rs. 8 per mensem each.
Annual outturn—
Refined saltpetre—
Quantity.—600 maunds.
Value.—About Rs. 6,000.
Kuthia saltpetre—
Quantity.—228 maunds.
Value.—Rs. 900.
- (b) *Refinery at Bhengari (belongs to Deo Dutta):—*
Consumption of crude saltpetre.—1,675 maunds.
Number of hands.—Three : paid at Rs. 8 per mensem each.
Annual outturn—
Refined saltpetre—
Quantity.—750 maunds.
Value.—About Rs. 7,500.
Kuthia saltpetre—
Quantity.—330 maunds.
Value.—Rupees 1,320.
- (c) *Refinery at Sahebganj (belongs to Ram Bachan):—*
Consumption of crude saltpetre.—1,300 maunds.
Number of hands.—2 (one paid at Rs. 8 per mensem and other at Rs. 12 per mensem).

*Annual outturn—**Refined saltpetre—**Quantity.*—550 maunds.*Value.*—About Rs. 5,500.*Kuthia saltpetre—**Quantity.*—200 maunds.*Value.*—Rupees 800.*(b) Indigo manufacture.*

There are eight Indigo Factories in the district out of which one is detailed below ; the others work on similar lines.

Raw material.—Indigo is grown by the owners of the factories themselves.

Ghazia Indigo Factory, Tamkohi.

Year 1922-23.

Owner.—Raja Indrajit Pratap Bahadur Sahi of Tamkohi.*Labour—**Permanent.*—66.*Temporary.*—101.*System of payment*—**Permanent.*—Rupees 12 per mensem each.*Temporary.*—Rupees 3 to Rs. 8 per mensem each.*Engine.*—Steam engine of 16 N. H. P.*Area over which indigo grown.*—422 bighas.*Outturn—**Weight.*—65 maunds.*Value.*—Rupees 19,500.*Sale price.*—Rupees 300 per maund.*Marketing system.*—Through agents at Calcutta.**3. Food-grains.***(i) Dal splitting.*

Raw material.—Arhar is purchased locally and also imported from Basti, Gonda and Bahraich districts.

Average price.—Rupees 3-10 per maund.

Labour.—Women and children are paid 2 annas 6 pies a day. Men are paid 4 to 5 annas a day.

* The labourers belong to his own state and so are to be had at cheap rates.

For splitting one maund of arhar cost of labour is about 6 annas.

Marketing.—Almost all is exported to Benares and Calcutta and sold as—

	Rs.	a.	p.	
Dal	5	4	0	per maund.
Khudi	2	8	0	„
Khanda	3	2	0	„
Husk	1	11	0	„
One maund of arhar gives—				
				Rs. a. p.
28 seers of dal costing	3	11	6	
5 seers of khudi costing... ..	0	5	0	
4 seers of husk costing	0	3	0	
1 seer of khanda costing... ..	0	1	6	
(2 seers wastage in cleaning and drying.)				
Total	4	5	0	

Profit made.—5 annas per maund.

Export.—Exports of dal from Chauri Chaura alone exceed 2 lakhs of maunds.

(ii) *Flour Mills.*

Mufassil Bank Flour and Lime Mills.

Capital.—Rupees 12,000.

Engine.—Steam engine of 29 N. H. P.

Establishment.—The following is the list of workers with their monthly salaries :—

	Rs.
1 manager	20
1 driver	44
1 fireman	12
5 thelamen	10 each.
4 mill-men	9 „
2 men to clean wheat	5 „
1 man for repairing mill-stone	17
1 mistri (for lime-kiln)	29

	Rs.
3 men to look after the lime-kiln (1 at Rs. 14 and 2 at Rs. 7 each) ...	28
1 man to weigh flour, etc. ...	10
1 clerk	12

Total amount of salary per year Rs. 3,216.

Engine expenses.—They import about 250 tons of coal from Jharia at Rs. 20 per ton.

Lubrication costs.—Rupee 1 daily.

Annual expenses.—Rupees 5,300 (300 working days in the year).

Wheat grinding.—They have got five grinding machines, of which only three are worked regularly.

Raw material.—They grind wheat on commission alone.

Annual outturn.—24,000 maunds. They get about 80 maunds of wheat daily to grind (about 40 maunds at retail and 40 maunds at wholesale rates).

Charges.—8 annas and 5 annas are rates for grinding wheat in retail and wholesale consignments respectively.

Annual income.—Rupees 9,750.

* *Other Flour Mills.*

There are eight Flour Mills in the district—six in the city, one in Deoria and one in Rudrapur. They are all worked by oil-engines.

Raw material.—They all work on commission.

Engine.—From 10 to 45 H. P.

Number of hands.—The following are the workers generally employed in each of the mills:—

	Rs.	Rs.
1 driver	15 to 40	per month.
4 thelaman	10	each.
1 man to weigh flour, etc.	10 to 12	per month.
1 to 3 mill-men	10 to 12	,,
1 clerk	15 to 20	,,

Annual outturn.—About 75,000 maunds.

Charges.—8 annas and 5 annas in retail and wholesale consignments respectively.

Kerosine oil.—4,800 tins consumed annually.

Wastage of flour.—One seer per maund.

* The figures are given collectively for the eight Flour Mills.

4. Hardware.

(i) Brassware.

*Manufacture—**Number of factories—*

(a) In Padrauna.—9 families for lotas.

16 „ „ thalis.

(b) In Gorakhpur city.—2 families.

Number of hands.—The lota manufacturers engage one man each at Rs. 7-8 per mensem. The thali manufacturers engage 10 men for beating out thalis at 12 annas each per day.

Annual outturn.—About 1,000 maunds.*Monthly income—*

(i) In the case of lotas—Rs. 23-14.

(ii) In the case of thalis—Rs. 27-8.

Dealer's profit—

(i) In the case of lotas—Rupees 6 per maund.

(ii) In the case of thalis—2 to 6 annas per seer.

(ii) Steel trunks.

Raw materials—

(i) Galvanized iron sheets—

Annual consumption.—220 maunds.*Price.*—Rupees 12 per maund.*Place of origin.*—Calcutta and Cawnpore.

(ii) Kerosine oil tins—

Annual consumption.—3,600 tins.*Price.*—Rupees 15 per 100.*Place of origin.*—Purchased locally.*Manufacture—**Labour.*—18 men.*Wages (piece wages)—*

(i) For tin trunks—4 annas per trunk.

(ii) For steel trunks—10 to 12 annas per trunk.

Sale price—

(i) Tin trunks—one anna per inch.

(ii) Steel trunks—2 to 4 annas per inch.

Annual outturn.—About Rs. 12,000.*Painting charges.*—4 to 8 annas per box.

5. Miscellaneous.

(i) Soap making.

A. HAMIDIA SOAP FACTORY, GORAKHPUR CITY.

It turns out Neem soap, Carbolie soap, Turkish Bath soap, Bar soap, Red Light soap and Toilet soaps of various kinds. The work has been resumed for the last six months.

Raw material—

(i) Oils are obtained locally at the following rates :—

	Rs.
Mahua oil at ...	22 per maund.
Cocconut oil at ...	30 „
Castor oil at ...	18 „

(ii) The following are imported :—

Articles.	Whence got.	Rate of purchase.	Import.
		Rs. a. p.	
Carbolic Acid ..	D. Waldie & Co., Cawnpore.	40 0 0 per md.	About 1 md.
Soda Ash ..	Brunner Mond & Co., Calcutta.	9 8 0 per cwt.	3 cwt.
Caustic soda ..	Ditto ..	22 4 0 „	1 ton.
Soda Silicate ..	Ditto ..	22 4 0 „	10 cwt.
Caustic Potash ..	Ditto ..	80 0 0 „	1 „
Acids ..	Ditto ..	230 0 0	
Castor oil ..	Calcutta ..	15 0 0 per md.	18 mds.
Scent ..	B. K. Paul, Calcutta	200 0 0	

Labour.—3 men on monthly salaries of Rs. 10 each.

Manufacture.—The following gives the ingredients used, cost of manufacture, sale price, outturn and profit in each case :—

Kind of soap.	Ingredients.	Cost of manufacture.	Sale price.	Profit.	Monthly out-turn.
1. Neem ...	Neem oil ... Chalmongra oil. Sulphur. (Hot process).	Soap Rs. 10 per gross Boxes " 2 "	Ra. 18 per gross	Ra. 6 per gross	1 gross.
2. Carbolic ...	Mahua oil ... Cocoanut oil. Castor oil. Carbolic acid Phenyle (5 per cent. Carbolic). (Hot process).	Soap " 6 Glazed tin-foil and label Rs. 3.	13-8 "	4-8 "	5 "
3. Turkish Bath	Turkish Bath oil ... Narciss Powder. (Scent). Cocoanut oil. (Cold process).	Soap Rs. 10 per gross Box " 2-8 "	18 "	5-8 "	2 "
4. Bar (Washing soap) made in three qualities.	Mahua oil ... Castor oil. Fat.	(1) Soap Rs. 12 per md. (2) " " 20 " (3) " " 22 "	16 } 22 } per md. 25 }	4 } 2 } 3 }	... 20 mds.
5. Red Light ...	Mahua oil ... Cocoanut oil. Castor oil.	Soap " 23 " Box " 5	34 per gross.	6 per gross.	20 gross.

Marketing system.—Sale is both local and outside the district. Soaps are sent to the neighbouring districts and go as far as Calcutta and Karachi.

B. SMALL FIRMS.

Number of firms.—Four small firms in the village of Lar. They manufacture washing soaps.

Raw material—

(i) *Mahua and neem oil—*

Quantity.—270 maunds.

Value.—Rupees 3,100.

Place of origin.—Benares.

(ii) *Sajji—*

Quantity.—240 maunds.

Value.—Rupees 480.

Place of origin.—Jaunpur district.

(iii) Lime is purchased locally at 4 annas a maund.

Labour.—Each firm engages 3 men on daily wages of 4 annas each.

Annual outturn.—About 320 maunds.

Marketing system.—Almost all is exported to the Nepalese markets through dealers. Sale price is Rs. 18 per maund.

For the manufacture of 2 maunds of soap the following expenses are incurred :—

	Rs.	a.	p.
60 seers of oil	...	18	0 0
Fuel	...	6	0 0
Sajji	...	2	8 0
Lime	...	0	8 0
Labour	...	2	4 0 for 3 days.
Total	...	29	4 0

Sold for Rs. 36.

Profit.—Rs. 6-12 for 2 maunds.

* (ii) *Forest produce.*

Area of forests.—176½ square miles.

* The figures are only for Government reserved and leased forests, and for the year 1921-22.

Consists of:—

(1) Clear fellings by compartments	...	40 sq. miles.
(2) Improvement	...	59 „
(3) Protection only	...	3 „
(4) Grass and other minor produce	...	74 $\frac{1}{4}$ „
		<u>176$\frac{1}{4}$ „</u>

Outturn and resources—

Timber—

Sal	...	917,418 c.ft.
Asna	...	1,113 „
Haldu	...	1,183 „
Miscellaneous	...	47,000 „

Total ... 966,714 „, valued at Rs. 8,16,804.

Fuel.—2,034,964, valued at Rs. 2,03,496.

Bamboos.—1,834 (in number), valued at Rs. 152.

Minor produce.—Rupees 72,816.

Sleepers sold to railway at Rs. 2-8 each.

Sleepers measure 6 ft. × 8 in. × 4 $\frac{1}{2}$ in.

(1) Passed sleepers	...	159,775
(2) Rejected sleepers	...	39,980

The rail-borne trade figures show that 120,000 maunds of timber logs and over 4 lakh maunds of unwrought timber has been exported from the district.

Wages paid by the contractors—

Felling the trees and chopping off the branches—Rs. 2-8 to Rs. 3-8 per 100 trees.

Chatta making.—Rs. 3-8 to Rs. 4 per chatta of 20 × 5 × 5 c.ft.

Sleeper making.—8 annas per sleeper.

Rate of sale—

	Rs.	a.	p.
Sleepers (size 6 ft. × 8 in. × 4 $\frac{1}{2}$ in.)	...	2	8 0 each.
Chatta 20 × 5 × 5 c.ft.	...	40	0 0
Log wood 25 ft. long × 1 sq. ft.	...	0	12 0 each.

			Rs. a. p.
Log wood 25 ft. long × 1½ sq.			
ft. ...	...	...	1 2 0 each.
Log wood 25 ft. long × 1½ sq.			
ft. ...	...	...	1 12 0 ,,
Log wood 25 ft. long × 1¾ sq.			
ft. ...	...	...	2 12 0 ,,
Log wood 25 ft. long × 2 sq.			
ft. ...	...	...	4 0 0 ,,
Log wood 25 ft. long × 3 sq.			
ft. ...	...	...	13 0 0 ,,

(iii) *Bengal and North-Western Railway Co. Loco. Works.*

Year 1921-22.

Raw material—

1. *Iron and steel—*

Value.—Rupees 1,57,547.

Place of origin.—England.

2. *New rolling stock—*

Value.—Rupees 34,39,327.

Place of origin.—England.

3. *Wood—*

Value.—Rupees 72,091.

Rate of purchase of wood—

			Rs. a. p.
Teakwood at	...	4 0 0	per c.ft.
Sal	...	2 4 0	„
Shisham	...	2 4 0	„
Asna	...	1 0 0	„

Manufacture.—Erection of new and repair of old rolling stock, etc.

Labour.—3,800 men work daily.

Wages—

(i) *Skilled labour—*

(a) Blacksmiths, fitter, carpenter, turner, boilermaker,
8 annas to Re. 1-12 each per day.

(b) Mason, painter, engine driver of stationery boilers,
8 annas to Re. 1-4 each per day.

(ii) *Unskilled labour.*—Peons, coolies, etc., 5 annas 4 pies to 6 annas 8 pies each per day.

N.B.—Mistris (headmen) are getting Rs. 2 to Rs. 3-10 each per day.

Annual outturn of new rolling stock :—

- Engines—4.
Carriages—27.
Wagons—512.

6. Oil.

The district produces about 553,400 maunds of oil-seeds.

Local use.—The telis consume about 2 lakhs of maunds and the oil mills consume about 27,000 maunds.

Oil-seeds are also imported from Basti and Gonda districts in large quantities for re-export to Benares and Calcutta.

Manufacture—

(i) *Cottage industries—*

Number of telis.—3,586.

Oil seed consumed.—About 2 lakhs of maunds.

Outturn of oil.—About 60,000 maunds (taking an average percentage of 30 per cent. oil for mustard and linseed).

Price.—About Rs. 40,000.

Daily earnings of one family.—About 12 annas.

(ii) *Oil mills.*—There are three oil mills in Chauri Chaura which crush only different varieties of rape and mustard. They buy them at the following rates :—

Variety.	Price per maund.			Percentage of oil
	Rs.	a.	p.	
Lahi	8	0 0	35
Rye	7	0 0	28
Tewra	4	0 0	20
Galbalia (a mixed variety)...	...	6	4 0	25

They have also got Flour Mills which work on commission.

(a) *Oil mills owned by Sirdar Umrao Singh.*

This mill is given on lease to Gobardhan Sheonath on payment of Rs. 115 per month.

Consumption of oil-seeds.—The following table gives roughly the consumption of different varieties of mustard, out-turn of oils, etc. :—

Variety.	Oil-seeds		Oil (outturn).		Cake (outturn).	
	Weight.	Value.	Weight.	Value.	Weight.	Value.
	Maunds.	Rs.	Maunds.	Rs.	Maunds.	Rs.
Lahi	4,000	32,000	1,400	} 57,500	6,500	16,250
Rye	3,000	21,000	840			
Tewra	2,500	10,000	500			
Total	9,500	63,000	2,740	57,500	6,500	16,250

Number of kolhus in the mill.—They have got 32 kolhus in all, of which about 21 work daily. Besides they have got two Four Mills, for which they get about 30 maunds of wheat and 70 maunds of chuni (pulse pieces) to grind on commission.

Engine.—Steam engine of 17 N. H. P. Allowed to work on 90 lbs. pressure.

Working expenses (daily)—

	Rs.
Coal about $\frac{3}{4}$ ton, worth	15
Lubrication costs about	1
Total	16

Number of hands.—The following table gives the number of men entrusted with different works with their monthly salaries :—

Workmen	No.	Monthly salary.
		Rs.
Engine driver	1	30
Fireman	1	12
Waterman	1	10
Man engaged on the kolhu	1	12
Men engaged on the kolhus	3	10 each.
Carpenter, etc.	1	20
Ditto	1	16
Ditto	1	8

Workmen	No.	Monthly salary.
		Rs.
Watchman ...	1	9
Extra ...	1	8
Total ...	12	135

Total wages for one month, Rs. 155.

Casual expenses; Rs. 75 per month for repairs and substitution of new kolhus.

The following table gives the annual expenses and income (300 working days in the year) :—

Expenditure.		Income.	
	Rs.		Rs.
Cost of oil-seeds ...	63,000	Price of oil ...	57,500
Working expenses ...	4,800	Price of oil-cake ...	16,250
Wages ...	1,860	Commission for	
Casual expenses ...	900	grinding wheat and	
Given to owner for		chuni ...	480
lease ...	1,380		
Total ...	71,940	Total ...	74,230

Annual profit.—Rupees 2,290.

(b) Oil mills owned by Behari Mahadeo Prasad.

Consumption of oil-seeds, outturn, etc. :—

Variety.	Oil-seeds.		Outturn of oil.		Outturn of cake.	
	Weight.	Value.	Weight.	Value.	Weight.	Value.
	Maunds.	Rs.	Maunds.	Rs.	Maunds.	Rs.
Lahi ...	4,000	32,000	1,400	} 60,060	6,800	17,000
Rye ...	2,000	14,000	580			
Tewra ...	2,000	8,000	400			
Galbalia ...	2,000	12,500	500			
Total ..	10,000	66,500	2,880	60,060	6,800	17,000

Number of kolhus in the mill.—There are 20 kolhus in the mill, but only 18 work regularly. Besides they have got one

Flour Mill which grinds about 50 maunds of wheat and 30 maunds of chuni (pulse pieces) per month on commission.

Engine.—Steam engine of 22 N. H. P. Allowed to work on 100 lbs. pressure.

Engine expenses (daily)—

			Rs.
Coal about $\frac{3}{4}$ ton	...	...	15
Lubrication	...	...	1
		Total	16

Number of hands—

Workmen	No.	Monthly salary.
		Rs.
Engine driver	1	50
Fireman	1	15
Waterman	1	8
Man engaged on the kolhu	1	20
Ditto	1	16
Men engaged on the kolhus	2	10 each.
Carpenter	1	20
Ditto	1	9
Extra	1	7
Total	10	165

Total wages for one month.—Rupees 165.

Casual expenses.—Rupees 75 per month for repairs and substitution of new kolhus.

The following table gives the annual expenses and income (300 working days in the year):—

<i>Expenditure.</i>		<i>Income.</i>	
	Rs.		Rs.
Cost of oil-seeds	66,500	Cost of oil	60,060
Working expenses	4,800	Cost of oil-cake	17,000
Wages	1,980	Commission for	
Casual expenses	900	grinding wheat and	
		chuni	540
Total	74,180	Total	77,600

Annual profit.—Rupees 3,420.

(c) Oil mills owned by Bisheshwar Lal.

Consumption of oil-seeds, outturn, etc.—

Variety.	Oil-seeds.		Outturn of oil.		Outturn of cake.	
	Weight.	Value.	Weight.	Value.	Weight.	Value.
	Maunds.	Rs.	Maunds.	Rs.	Maunds.	Rs.
Lahi	3,000	24,000	1,050	} 43,386	4,900	12,250
Rye	2,200	15,400	616			
Tewra	2,000	8,000	400			
Total	7,200	47,400	2,066	43,386	4,900	12,250

Number of kolhus in the mill.—There are 20 kolhus in the mill, but only 16 work regularly. Besides they have got one Flour Mill which grinds 20 maunds of wheat and 20 maunds of chuni (pulse pieces) every month on commission.

Engine.—Steam engine of 17 N. H. P. Allowed to work on 90 lbs. pressure.

Engine expenses (daily)—

	Rs.
Coal about $\frac{3}{4}$ ton	15
Lubrication	1
	—
Total	16
	—

Number of hands—

	Rs.
One Engine driver	40 per mensem.
One Fireman	11 ,,
Three Men engaged on mills	12 ,, each.
One Waterman	8 ,,

N.B.—The owner is himself a carpenter and so does all the repairs, etc.

Total wages for one month—Rupees 95.

Casual expenses.—Rupees 50 per month for repairs, etc.

Year 1921-22.

Number of hands—

(i) Cotton fabrics—33.

(ii) Durrie weaving—10.

Wages—

(i) Weaving—One anna to 5 annas a yard.

(ii) Warping—One man at 3 annas a day.

One man at 5 to 10 annas for warping
118 yards.

(iii) *Filling bobbins*—One anna to 2 annas per lb. of yarn.

Capital—Rupees 2,373.

Annual outturn—

Cotton fabrics—Rupees 8,279.

Durries—Rupees 2,104.

Others—Rupees 117.

Profit—Rupees 1,049.

Marketing system—

(i) By sale in their retail shop.

(ii) Through Bareilly Salvation Army Dépôt, in which
case the profit is divided equally between them.

Prices—

Dusters Rs. 6 to Rs. 8-8 per doz
according to size.

Dosutie Re. 0-10-0 to Re. 1-10 per
yard according to width.

Sheets—

Twill 90 in. × 64 in. ... Rs. 4-4.

Dosutie 90 in. × 55 in. ... Rs. 4.

Swabs 16 in. × 16 in. ... Rs. 7-8 per doz.

(b) *Sheikh Murtaza Hussain's weaving factory.*

Capital—Rupees 1,000.

Number of looms—3 (Salvation Army pattern.)

Articles made—Garha, twill, dosutie, towel.

Number of hands—3 (1 paid at Rs. 16 a month, 1 at Rs. 12
a month and 1 at 2 annas per yard).

Wages—for warping, etc. Re. 1-4 and for bleaching
4 annas.

Annual outturn—Rupees 3,000.

Profit—Rupees 660.

Marketing system—By direct sale on the spot and by intro-
ducing the cloth among their friends and acquaintances.

*(c) Mahādeo Prasad's Khaddar weaving factory.**Number of looms*—5 (throw-shuttle looms).*Number of hands*—7 (5 paid at piece wages and two paid Rs. 8 each per mensem.)*Wages*—*Weaving*—One anna 3 pies to 2 annas per yard.*Sizing and warping etc.*—Re. 1-4 for 32 yards.*Annual outturn*—Rupees 4,000.*Profit*—Rupees 840.*Marketing system*—By direct sale on the spot.

B. WOOL.

Raw material—Local produce. According to the cattle census of 1919-20 there were about 63,000 sheep and they produce about 1,000 maunds of wool, out of which about 200 maunds are utilised by the blanket weaving factories and 200 maunds by shepherds.

Export—About 600 maunds.*Place of consignment*—Cawnpore.*Value*—About Rs. 20,000.*Blanket weaving factories.**(i) Barkatullah's factory (Khunipur)*—*Number of looms*—8 (throw-shuttle).*Number of hands*—It depends on the demand of blankets and also on the availability of weavers. It is not fixed.*Wages*—According to piece work.*Carding*—8 seers a rupee.*Spinning*—6 annas a seer.*Weaving*—6 annas per blanket (3 yards × 54 in.).*Milling*—3 annas per blanket.*Annual outturn*—2,400 blankets.*Profit*—About Rs. 1,200.*(ii) Rahmatullah's factory (Khunipur)*—*Number of looms*—12 (throw-shuttle).*Number of hands*—Not fixed.*Wages*—According to piece-work [same as in (i) above].*Annual outturn*—3,600 blankets or Rs. 16,500 in value.*Profit*—About Rs. 1,800.

8. Woodwork.

(i) Furniture making.

There is only one firm belonging to Sheikh Nukched for this work

Raw material—Wood. Entire Shisham trees are bought locally for Rs. 20 to Rs. 100 each. Sleepers are bought at Re. 1-4 per c. ft.

Annual consumption of wood—About Rs. 3,000.

Labour—

(i) Ten carpenters, paid 10 to 12 annas each per day.

(ii) One polishing mistri, paid at Rs. 15 per month.

Manufacture—Tables, chairs, stools, etc., are prepared and sold in public markets.

Tables—Folding pattern, sold for Rs. 18 each.

Non-folding, sold for Rs. 18 each.

Chairs—Arm chairs, sold for Rs. 7-8 each.

Armless chairs, sold for Rs. 5 to Rs. 4 each.

Annual outturn—Rupees 6,000 approximately.

Profit—3 annas per rupee on the cost of manufacture.

(ii) *Palanquin making.*

Raw material—Same as in furniture making.

Manufacture—There are 25 families of carpenters who make palanquins.

Outturn—3,000 palanquins.

Price—Rupees 8 to Rs. 65 per palanquin.

The following gives approximately the cost of making one palanquin sold for Rs. 65 :—

Size—6½ ft. × 2¾ ft.

One man can make it in 20 days.

	Rs.	a.	p.
Cost of wood	...	16	0 0
Do. iron fittings	...	7	0 0
Do. brass fittings	...	3	12 0
Do. cane charges	...	2	0 0
Do. Lining cloth, etc.	...	10	0 0
Do. varnishing	...	4	0 0
Do. glass panes	...	2	0 0
Total	...	44	12 0

Cost of labour for 20 days comes to Rs. 21-12 or Re. 1-1-6 daily.

In the case of cheaper palanquins the cost of labour decreases.

Marketing—Sold locally, and also exported to Pilibhit, Bara Banki, Benares, etc.

(iii) *Turnery and Lacquered work.*

Raw material—Mango wood is purchased locally from the dealers.

Manufacture—There are 13 families who have got 29 lathes between them.

Labour—Each man engages a turning man to work the lathe and pays 4 annas daily.

Articles made and their price is as follows :—

Tambourine frames (khanjari) ... 10 to 12 for a rupee.

Dibias (covered) ... 10 to 16 ,, ,,

Small capsules ... 16 to 20 ,, ,,

Annual outturn—About Rs. 11,000.

Marketing—Sold in the local markets and also exported to Patna, Chupra, etc. They are largely sold in the local fairs.

Profit—Six annas per rupee on the cost of manufacture.

CHAPTER V.

DIRECTORY.

1. *List of Banks.*

The Allahabad Bank, Ltd., Gorakhpur.
 The Mufassil Bank, Gorakhpur.
 The Kaisar Bank, Gorakhpur.
 The District Bank, Gorakhpur.
 The Central Co-operative Bank, Gorakhpur.
 The Aman-O-Aman Bank, Sahjanwan (Gorakhpur).

2. *List of Industrial Schools.*

The Government Technical School, Gorakhpur.
 The District Board's Weaving School, Deoria.
 The National Weaving School, Deoria.

3. *List of Brick-kiln owners.*

Sheikh Murtaza Husain, Gorakhpur.
 Bhenra Mal, Gorakhpur.
 Ganga Ram, Gorakhpur.
 Teku Mal, Gorakhpur.
 Baldeo Prasad, Gorakhpur.
 Jugul Kishore, Gorakhpur.
 Audani, Gorakhpur.

4. *List of Lime-kiln owners.*

Sheikh Murtaza Husain, Gorakhpur.
 Jugul Kishore, Gorakhpur.
 Baldeo Prasad, Gorakhpur.
 Audani, Gorakhpur.
 The Mufassil Bank Lime Factory, Gorakhpur.

5. *List of Saltpetre refiners.*

Gokul Prasad of Jamsara.
 Deo Dutta of Bhengari.
 Ram Bachan of Sahebganj.

6. *List of Flour Mills.*

Harnam Singh's Flour Mills, mohalla Khunipur, Gorakhpur.

The Mufassil Bank Four Mills, mohalla Alinagar, Gorakhpur.

Md. Sami and Partners' Flour Mills, mohalla Khunipur, Gorakhpur.

Rahim Bux Jurawan's Flour Mills, mohalla Sahebganj, Gorakhpur.

Chunni's Flour Mill, mohalla Sahebganj, Gorakhpur.

Thakur Prasad Ganesh Ram's Flour Mills, mohalla Sahebganj, Gorakhpur.

Hari Charan Lal's Flour Mill, mohalla Sahebganj, Gorakhpur.

Raja Rudrapur's Flour Mill, Rudrapur (Gorakhpur).

The Punjab Flour Mill, Deoria (Gorakhpur).

7. *List of owners of city grain markets called "golas"*

Hansraj.

Rikhai.

Bengali.

Salaran Chaudhry.

Teerath.

Rahmatullah.

Lulu.

Chamru.

Neebar and Kishun.

Kishun.

Hasan Ali.

Maula Chaudhry.

Lalji Ramcharitra.

Sita Ram.

Sher Khan.

Mian Saheb.

8. *List of Grain exporters.*

Harkishun Das, Gorakhpur.

Chaiti Lal, Gorakhpur.

Gauri Datta, Gorakhpur.

Hardeo Das, Gorakhpur.

B. Murari Lal, Gorakhpur.

Hari Lal Shyam Lal, Gorakhpur.
 Har Sarup Ram, Padrauna.
 Begal Ram, Padrauna.
 Chedi Lal Kalwar, Barhalganj.
 Baldeo Prasad Kalwar, Barhalganj.
 Harakh Chand Lal, Barhalganj.
 Harnarain Kedar Nath, Deoria.
 Sukhdeo Ram Jatha Ram, Deoria.
 Sooraj Mal Badri Prasad, Deoria.
 Bhoramal Jamnadas, Deoria.

9. *List of Grain and pulse dealers.*

Madho Prasad Shankar Lal, Chauri Chaura.
 Baldeo Ram Salig Ram, Chauri Chaura.
 Ram Charan Das, Chauri Chaura.

10. *List of Hardware dealers.*

Bhagwan Das Sita Ram, Gorakhpur.
 Kunj Behari Chhote Lal, Gorakhpur.
 Ram Dhani Ganga Ram, Gorakhpur.
 Ganpat Ram Sita Ram, Padrauna.
 Sheo Ram Saho, Deoria.
 Lachman Ram Mahadeo Ram, Deoria.

11. *List of Steel Trunk manufacturers.*

Mohammad Yusuf, Gorakhpur.
 Reyaz Husain, Gorakhpur.
 Nurul Hasan, Gorakhpur.

12. *List of Hide exporters.*

Baqridan, Gorakhpur.
 Rahiman, Gorakhpur.
 Bahetu, Gorakhpur.
 Safari, Barhalganj.
 Rasulan, Barhalganj.
 Nate, Barhalganj.

13. *List of Skin exporters.*

Haji Abdul Ghafoor, Gorakhpur.
 Rahmatullah, Gorakhpur.
 Hafiz Lal Mohammad, Gorakhpur.

Serajul Haq, Gorakhpur.
 Bafati, Gorakhpur.
 Durga, Barhalganj.

14. *List of Bone exporter.*

Rahmatullah, Gorakhpur.

15. *List of Boot and Shoe-making Factories.*

Rahmatullah's Factory, Gorakhpur.
 Abdul Qadir's Factory, Gorakhpur.

16. *List of Shoe-merchants.*

Mohammad Yaqub, Gorakhpur.

17. *List of Indigo Factories.*

Factory.	Owner.
The Gazia Indigo Factory	... Raja Saheb Tamkahi.
Ratassia Indigo Factory	... The Partabpur Concern.
Chukia Indigo Factory	... ..
Bubnowlie Indigo Factory	... Mr. F. Mackinnon.
Sapha Indigo Factory	... ..
Baikunthpur Indigo Factory	... ..
Domath Indigo Factory	... ..
Kinderpatti	... Mr. Sealey.

18. *List of Soap manufacturers.*

Abdul Hameed's Hamidia Soap Factory, Gorakhpur.
 Mohammad Husain Abdul Rahim, Lar.
 Haji Jumman Rahmatullah, Lar.
 Abdul Haq Mohammad Islam, Lar.
 Rahmatullh, Lar.

19. *List of Forest contractors and Timber Merchants.*

Ali Husain Khan, Gorakhpur.
 Abdul Rahman, ..
 Abdul Rahim, ..
 Jagannath Prasad, ..
 Sh. Murtaza Husain, ..
 Mohammad Usman, ..
 Mohammad Yaqub, ..
 Nur Mohammad, ..
 Mustafa Husain, ..

Mathura Prasad Ram Dhani, Gorakhpur.
 Mohammad Yaqub and Jagannath Prasad, Gorakhpur.
 Mohammad Yaqub Ali and Abdul Baqi,
 Serajul Haq, Gorakhpur.

20. *List of Grass contractors.*

Ali Asghar Khan.
 Suraj Bali Singh.
 Dwarka Ahir.
 Suraj Narain Mahadeo Prasad.
 Sh., Salamat.
 Dwarka Das.

21. *List of Bristle exporters.*

Gopi, Barhalganj.
 Lachman, Barhalganj.
 Krishna, Barhalganj.
 Gopi, Barhaj Bazar.
 Gokul, Barhaj Bazar.
 Gaya, Barhaj Bazar.

22. *List of Printing Presses.*

The Bharat Prakash Press, Gorakhpur.
 The Dinapore Press, "
 The Church Mission Press, "
 The Printing Press, "
 The Mashriq Press, "
 The Rafah-i-Am Press, "
 The Bharat Sudhar Press, "
 The Kumar Press, "
 The Tahqiq Press, "
 The Ehsania Press, "
 The Sewa Press, "
 The Swedeshi Press, "
 The Gyan Shakti Press, "

23. *List of Oil Mills.*

Sirdar Umrao Singh's Oil Mill, Chauri Chaura.
 Behari Mahadeo Prasad's Oil Mill, Chauri Chaura.
 Bisheshwar Lal's Oil Mill, Chauri Chaura.
 Sirdar Kirpal Singh's Oil Mill, Saraya.

24. *List of Commission Agents for oil.*

Sh. Haji Mohammad Ali, Benares.
 Puran Bhagat Gopal Ram, Mymensingh.
 Janki Prasad Tapeswari Prasad, Pervisganj.

25. *List of Agent for oil-cake.*

Raghunath Prasad Dwarka Prasad, Benares.

26. *List of Cotton yarn dealers.*

Mahabir Prasad, Gorakhpur.
 Mahadeo Prasad, Gorakhpur.
 Karamatullah, Gorakhpur.
 Hafiz Abdullah, Gorakhpur.
 Hira Lal, Barhalganj.
 Shyam Sundar, Barhalganj.
 Pateshwari Prasad, Barhalganj.
 Kanhaiya Lal, Barhalganj.
 Raghunath Lal, Barhalganj.
 Durga Mal, Barhalganj.
 Bhagwan Das Lachhi Ram, Deoria.
 Hari Ram Bilas Ram, Deoria.
 Ganesh, Padrauna.

27. *List of Weaving Factories.*

The Criminal Tribes' Salvation Army Settlement, Gorakhpur.

Sh. Murtaza Husain's Weaving Factory, Gorakhpur.
 Mahadeo Prasad's Weaving Factory, Gorakhpur.

28. *List of Blanket Weaving Factories.*

Barkatullah's Blanket Weaving Factory, Gorakhpur.
 Rahmatulla's Blanket Weaving Factory, Gorakhpur.

29. *List of Cloth merchants.*

Har Dutta Rai Har Narain, Gorakhpur.
 Tola Ram Genda Ram, Gorakhpur.
 Lalji Girdhar Das, Gorakhpur.
 B. Murari Lal, Gorakhpur.
 Qasim Mohammad & Co., Gorakhpur.
 Dooli-chand Matru Mal, Deoria.
 Kaloo Ram Bholu Ram, Deoria.
 Puranmal Onkarmal, Deoria.

Mahadeo Ram Badri Das, Deoria.
Rampat Das Dina Ram, Deoria.
Bhagwan Das Lachhi Mal, Deoria.
Hari Ram Bilas Rai, Deoria.
Bisheshar Lal Bishambhar Ram, Deoria.
Debi Dutt Suraj Mal, Padrauna.
Hansraj Baijnath, Padrauna.
Dedhraj Dwarka Das, Padrauna.
Rama Narain Hanuman Das, Barhalganj.
Pateshwari Prasad, Barhalganj.

30. *List of Furniture maker.*

Sheikh Nukchhed, Gorakhpur.

31. *List of Coach-builder.*

Brij Bullabh Chaube, Gorakhpur.

CHAPTER VI.

MISCELLANEOUS.

Octroi statement of the Gorakhpur Municipality for the year 1921-22.

Article.	Quantity of imports.	Value of imports.	Rate of octroi tax.
<i>Imports.</i>	Maunds.	Rs.	Rs. a. p.
Wheat and Wheat Flour ...	111,647		0 1 0
Rice ...	182,089		0 1 0
Barley and Gram ...	38,833		0 0 6
Other Food-grains ...	309,021		0 0 6
Refined Sugar ...	16,563		0 5 0
Unrefined Sugar ...	44,828		0 2 0
Ghi ...	4,385		0 12 0
Oil ...	2,505		0 5 0
Oil-seeds ...	...		0 1 0
Chemicals ...	...	1,44,386	1 9 0*
Gums ...	...	284	3 2 0*
Native cloth, etc. ...	...	6,12,587	0 10 0
Other cloth, etc. ...	...	8,79,938	2 0 0
Leather and leather articles		56,174	1 9 0*
Metals and articles made of metals		2,84,386	1 9 0*

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3. District Gazetteer.
4. Monographs on various industries of the United Provinces.
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* Per cent. ad valorem.

Report on the
INDUSTRIAL SURVEY
of the United Provinces

Hamirpur District

By

GANGA NARAIN BHARGAVA, B.A.



ALLAHABAD :

Printed by the Superintendent, Government Press, U P.

1923

I N D E X.

	Page.
FOREWORD—	
CHAPTER I (INTRODUCTION)—	
1. General features	1
2. Population	<i>ib.</i>
3. Forest area	<i>ib.</i>
4. Rivers	<i>ib.</i>
5. Canals	<i>ib.</i>
6. Railways	<i>ib.</i>
7. List of roads	2
8. List of ferries in the district	3
9. List of markets	<i>ib.</i>
10. List of important fairs	4
11. Cattle census, 1920	5
CHAPTER II—	
1. Art industries	6
2. Building stone and minerals	<i>ib.</i>
3. Food-grains	7
4. Leather	9
5. Miscellaneous	11
6. Oils	12
7. Textiles	15
CHAPTER III—	
Industrial possibilities of the district	19
CHAPTER IV (STATISTICS)—	
1. Leather	21
2. Oil-pressing	22
3. Textiles	<i>ib.</i>
CHAPTER V (DIRECTORY)—	
1. Stoneware manufacturers	25
2. Cloth firms	<i>ib.</i>
3. Factories	<i>ib.</i>
4. Yarn shops	26
5. Exporters of 'pan'	<i>ib.</i>
BIBLIOGRAPHY -	

FOREWORD.

HAMIRPUR is an out-and-out agricultural district. Being away from the railway line, the headquarters possess practically no industries. The only places of trade are Mahoba, Maudha, Kulpahar and Harpalpur on the borders of the district.

The report is compiled on the lines of the previous reports and is divided into five chapters. Chapter I is a small introduction while chapter II deals with existing industries of the district. Chapter III is a summary of the various suggestions for the starting of new industries and improvements in the existing ones while in chapter IV are collected together statistics of a provincial handbook. The report ends with a directory of the principal firms and dealers. Attempt should be made to organise the wool workers into a co-operative society which could possess a carding machine. This will set free more persons for spinning. It would be more profitable to export yarn than carded and raw wool. Boys of the goldsmiths and brass idol-makers can be easily trained in the Lucknow Arts School if they so desire. If the art dies out, it will be more on account of the apathy of the workers or change in tastes than on account of want of facilities.

Mr. S. T. Gadre, Industrial Chemist to Government, has revised the report and thanks are due to him. Thanks of the department are also due to the following gentlemen who have rendered help to the Superintendent in his work :—

1. A. G. Shirreff, Esq., I.C.S., Collector, Hamirpur.
2. Lala Chimman Lal, Sub-Divisional Officer, Mahoba.
3. B. Parmeshwari Dayal Amist, B.A., LL.B., M.L.C., Hamirpur.
4. B. Latha Ram Sahney, Mahoba.
5. B. K. Ghare, Esq., of the Agricultural College, Cawnpore.

CHAMPA RAM MISRA.

The 19th February, 1923.

CHAPTER I.

INTRODUCTION.

1.—General features.

(i) *Boundaries.*—The district of Hamirpur is bounded as follows:—

North.—Cawnpore and Fatehpur districts.

East.—Banda district.

South.—Native States of Charkhari, and Ohhatarpur, and the Jagirs of Alipura and Garrauli.

West.—Jhansi and Jalaun districts and the Native States of Baoni and Beri.

(ii) *Topography.*—In the south of the district are found numerous out-crops of gneiss rock surrounded by uneven broken country, and the hills at the base of which lie the villages which they have partly helped to form. From them stretches northward the alluvial plain as far as the Jamna river. The dividing line between these two tracts of the country runs roughly east and west through the town of Rath on the north of which no hills are found and there is nothing to relieve the monotonous stretch of black cotton soil.

2.—Population.

Census of 1921 recorded 440,245 souls.

3.—Forest area.

20,359 acres. Total area 4,167,156 acres.

4.—Rivers.

The Jamna, the Betwa, the Dhasan, the Ken and several minor streams.

5.—Canals.

Betwa and Dhasan canals

6.—Railways.

Railway station.

- | | |
|-------------------------------------------------------------|--------------------------------------------------------------------|
| (1) Great Indian Peninsula Railway.—Manikpur Jhansi Branch. | Kabrai, Kari-Pahari, Mahoba, Supa, Kulpahar, Bela Tal, and Ghutai. |
| (2) Great Indian Peninsula Railway.—Cawnpore-Banda Branch. | Bharwa, Sumerpur Jamuna South Bank Road, Maudaha, Iohauli, Akoria, |

7.—List of roads.

Provincial roads.

	Length in miles.
1. Cawnpore-Hamirpur-Saugor road ...	42
2. Fatehpur-Banda-Saugor road ...	23

*Local roads.*First class roads, metalled, bridged and
drained throughout.

1. Hamirpur station road ...	14
2. Mahoba Railway Feeder road ...	3
3. Mahoba to Charkhari ...	5
4. Jaitpur Railway Feeder road ...	1
5. Maudaha to Musikra road... ..	1
6. Kulpahar Railway Feeder road ...	2
7. Maudaha Railway Feeder road ...	1
8. Rath to Kulpahar	26
9. Hamirpur to Rath	17
10. Mahoba-Kulpahar road	5

Other important roads.

1. Mahoba-Kulpahar-Jaitpur road ...	9
2. Banda-Sumerpur road	20
3. Hamirpur-Kalpi road	12
4. Hamirpur-Muskara road	29
5. Baswari to Sisola road	26
6. Rath to Chendaut road	20
7. Panwari to Harpalpur road	13
8. Rath to Nagra-ghat road	16
9. Maudaha to Jalalpur road	21
10. Maudaha to Kapsa road	9
11. Rath-Jalalpur road	22
12. Panwari-Lachura road	6
13. Srinagar to Supa road	12
14. Jalalpur to Kharela road	9
15. Nowgong to Tehra road	15
16. Kunchta to Kabrai road	19
17. Srinagar to Jaitpur road	14

Non-metalled roads.

	Length in miles.
1. Panwari-Lachura	6
2. Rath-Kucheheha	11
3. Bewar to Kharela road	21
4. Sumerpur to Pataura	8
5. Jhalokhar to Jajalpur	10
6. Jalalpur to Kharela	12
7. Nowgong to Tehra	12
8. Rath to Jaitpur	25
9. Sumerpur to Pallani	2
10. Maudaha to Naraich	2
11. Maudaha to Ingotha	3

8.—List of ferries in the district.

River.	Ferry.
<i>Jamna</i>	1. Hamirpur.
	2. Bhauli.
	3. Sikrorhi.
	4. Pataura.
	5. Surauli Buzurg.
	6. Barua.
	7. Bachhrauli.
<i>Betwa</i>	8. Hamirpur.
	9. Sahorapur.
	10. Chandaut.

N.B.—The rivers are not now used for navigation.

9.—List of markets.

Tahsil.	Bazar.	Bazar days.
<i>Hamirpur</i>	1. Hamirpur	Tuesday and Saturday.
	2. Kurara	Sunday and Thursday.
	3. Ohhani Khurd	Saturday.
	4. Sumerpur	Wednesday and Saturday.
<i>Maudaha</i>	5. Maudaha	Tuesday and Thursday.
	6. Kharela	Tuesday and Saturday.
	7. Gahrauli	Friday.
	8. Pahari	Wednesday.
	9. Muskira	Sunday.

Tahsil.	Basar.	Basar days.
<i>Maudaha</i> — (concl'd).	10. Baswari	... Tuesday.
	11. Imilia	... Monday.
	12. Umri	... Monday.
	13. Bewar	... Sunday.
<i>Mahoba</i> ...	14. Naivada	... Sunday.
	15. Mahoba	... Daily and on Saturday.
	16. Sijwaha	... Wednesday.
	17. Srinagar	... Thursday.
	18. Kabrai	... Tuesday.
<i>Kulpahar</i> ...	19. Geondi	... Monday.
	20. Surha	... Sunday.
	21. Jaitpur	... Wednesday and Thursday.
	22. Loherni	... Tuesday.
	23. Ajnor	... Thursday.
	24. Tikaria Jaitpur	Monday.
	25. Supa	... Tuesday.
	26. Sungra	... Sunday.
	27. Kulpahar	... Monday and Thursday.
	28. Gaurhari	... Friday.
	29. Panwari	... Monday and Tuesday.
	30. Chauka	... Sunday.
<i>Rath</i> ...	31. Teia	... Tuesday.
	32. Bendo	... Saturday.
	33. Dulara	... Wednesday.
	34. Gohand	... Saturday.
	35. Rath	... Sunday.
	36. Aonta	... Thursday.
	37. Khera	... Monday.
	38. Majhawan	... Wednesday.
	39. Basila	... Friday.
	40. Dhagwan	... Sunday.

10.—List of important fairs.

Town or village.	Name of fair.	Date.
Miranpur ..	Dunaya ...	Kartik Puranmashi.
Saunkhar ...	Manasar Nath	Ditto.
Maihanan ..	Basnag ...	Ditto.
Chhani Buzurg	Sidh Rakh Baba	Pus Puranmashi (commences)

HAMIRPUR DISTRICT.

5

Town or village.	Name of fair.	Date.
Bhendi ...	Maheshuri Debi	Chait Sudi Naumi and Dasmi.
Rath Purab...	Ram Lila ...	Kuar Sudi Duj to Kartik Budi Tej.
Rath Uttar...	Bare Pir ...	11th Rabi-us-Sani.
Bara ...	Shiamla Debi ...	Asarh Sudi Puranmashi.
Tunka ...	Mardan Ghaib	Rabi-ul-awwal on Thursdays.
Mahob Kanth	Siddh ...	Magh Sankrant.
Jhurat ...	Ram Lila ...	Aghan Puranmashi.
Jaitpur ...	Krishna Lila ...	Kartik Puranmashi.
Ruphol ...	Mahadeo ...	Ditto.
Kamalpara ...	Dhanush Jagya	Aghan Sudi Panchami.
Supa ...	Krishna Lila ...	Pus Budi Panchami.
Gaurahri ...	Ditto ...	Aghan Budi Panchami.
Kulpahar ...	Jalbihar ...	Bhadon Sudi Teras.
Mahoba ...	Ram Lila ...	October 17th to 29th.
Do. ...	Kajaliya ...	Sawan Puranmashi.
Atraur ...	Dhanush Jagya	Aghan Sudi Panchami.
Sijwaha ...	Ditto ...	Aghan Sudi Dasmi and Eka-dashi.
Pawa ...	Kans Lila ...	Aghan Sudi Puranmashi.
Goindi ...	Sidhan and Dhanush Jagya.	Ditto.
Maudaha ...	Kans Lila ...	Bhadon Puranmashi.
Ohhani ...	Gaughat ...	Khichrahi day.

11.—Cattle census, 1920.

Bulls	...	...	168
Bullocks	...	...	124,780
Cows	...	...	84,461
Calves	...	...	93,567
Buffaloes	...	...	3,860
Cow-buffaloes	...	...	38,196
Young stock...	...	...	25,971
Sheep	...	...	31,332
Goats	...	...	101,167
Horses, mares, mules, donkeys, camels, and other pack animals	...	...	6,369

CHAPTER II.

1.—Art industries.

(i) *Silver and gold fishes.*—Maudaha has two families of goldsmiths which specialise in curiosity-jointed silver and gold fishes used as trinkets. The price of a fish depends upon the quantity of silver or gold used in its making. The industry is on decline as there is no demand for such articles on account of a change in the tastes of people.

(ii) *Brass idols and toys.*—Idol casting and the manufacture of small brass animals is carried on by two families of 'sonars' in Srinagar, south of Mahoba. The idols are of two kinds, solid and hollow; pure brass idols sell at Rs. 3 to Rs. 3-8-0 per seer, while those which are filled with lead at Rs. 2 per seer. Toys take the shape of animals. These are exported to Muttra, Allahabad, and Fyzabad to the value of Rs. 2,500 a year. The industry is on a decline as the products cannot compete with similar imported idols and brass animals. In course of time the industry is bound to disappear as the skill is confined to two families who are most unwilling to impart it to their brass workers.

2.—Building stone and minerals.

There are no mines in the district but granite can be quarried for use as rubble masonry in foundations, walls, and bridges, in every hill at a cost of Rs. 4 to Rs. 5 per 100 cubic feet. Broken granite called *gitti* (ballast) which costs on an average Rs. 6 to Rs. 6-8-0 per 100 cubic feet, is used for metalling roads in the district. The most important quarries from which *gitti* is obtained are Pahari, Garhi and Garon. There is a soap stone quarry at the village of Gaurhari in Tehsil Kulpahar owned by the zamindars of the village.

Toys, dishes, vases and a variety of other articles are made out of these soap-stones. These stone-wares are exported to several

places chiefly Hardwar, Allahabad, Benares, Fyzabad, Calcutta, Jagannath-Puri, to the value of Rs. 25,000 a year. The zamindars and other tenants of the village are the manufacturers of stone-wares. The labour consists chiefly of residents of the village and has acquired the skill of working soapstone into several kinds of articles. Work is discontinued during rains. The quarries are being worked for a long time and are almost exhausted now. Close to the quarries are lying heaps of unused chips and blocks of soapstone for which a market can be found in Bombay and Calcutta. Soapstone powder is used in the manufacture of French chalk and is put to several other uses. It is exported to oversea countries in large quantities. The zamindars of Gaurhari would be well-advised to reduce these unused chips and blocks into meal and then export the powder to Bombay or Calcutta. It can sell at about Rs. 2 per maund.

Near Srinagar in Mahoba tahsil, Kaolin, the sample of which has been sent to the Industrial Chemist to Government, United Provinces, Cawnpore, for analysis, is available. The approximate area under Kaolin is about 30 acres. The quantity available could not be ascertained.

On the borders of the Hamirpur district near Chhatarpur state Gypsum (crystalline Selenite) is found in large quantities.

3.—Food-grains.

(i) Area in acres under the principal crops in the district.

Crops.	Years.				
	1825 F.	1826 F.	1827 F.	1828 F.	1829 F.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	12,682	4,209	11,272	7,030	7,380
Wheat and gram	288,298	48,800	155,837	89,653	142,077
Wheat and barley	5,149	989	2,557	965	1,072
Barley	8,992	9,135	10,597	7,893	7,867
Barley and gram	38,270	10,116	22,087	7,267	9,682
Gram	115,634	180,701	195,228	206,972	184,398
Tobacco	655	322	833	228	504

INDUSTRIAL SURVEY.

Crops.	Years.				
	1925 F.	1926 F.	1927 F.	1928 F.	1929 F.
	Acres.	Acres.	Acres.	Acres.	Acres.
Linseed	35,709	891	25,500	6,378	10,785
Juar	65,800	47,998	77,778	75,381	77,695
Bajra	16,891	33,141	25,488	20,100	25,157
Juar and arhar ..	105,247	118,023	106,217	173,911	191,131
Bajra and arhar ..	19,908	30,440	18,836	19,318	23,732
Rice (early) ..	2,464	2,314	1,908	2,597	2,476
Rice (late) ..	97	179	127	200	70
Arhar	56	117	64	88	133
Urd and moong ..	4,934	4,879	5,517	3,863	5,043
Kodan and arhar ..	90,727	74,805	23,085	21,480	19,970
Sawan	1,368	1,074	559	923	881
Cotton and arhar ..	43,854	30,478	43,854	26,616	26,668
Cotton	4,740	3,134	3,616	1,621	2,064
Sugar cane	1,580	3,317	240	2,518	1,851
Sansal	5,208	2,901	5,501	5,501	4,849
Til	37,676	56,076	34,783	67,167	64,443

(ii) Crop out turn.

Crop.	Outturn in maunds.		Normal year for purposes of calculating the outturn.
	Irrigated.	Dry.	
Wheat	8	5	1927 F.
Wheat and gram ..	8	5	"
Wheat and barley ..	8	5	"
Barley and gram ..	12	10	"
Gram	6	5	"
Linseed	3 $\frac{1}{2}$	3	"
Barley	13	10	"
Tobacco	4	3	"
Sansal	0	3	"
Cotton and arhar ..	5	4	"
Cotton	5	4	"
Til	9 $\frac{1}{2}$	3	1928 F.
Juar	8	6	1927 F.
Bajra	6	4	"
Juar and arhar ..	8	6	"
Bajra and arhar ..	8	6	"
Rice	4	3	"
Arhar	4	3	"
Urd and moong ..	4	3	"
Kodan	6	5	"
Sawan	6	5	"
Sugar cane	45	0	"

4.—Leather.

(i) *General*.—The figures of the last cattle census taken in the year 1920 show that the district has a pretty large number of cattle specially cows, bullocks, buffaloes and goats. The district has six slaughter houses, one each in the Hamirpur, Mahoba, Maudaha, and Rath Tahsils, and two in the Kulpahar tahsil. These slaughter houses turn out about 6,000 maunds of raw hides and 2,000 maunds of skins in a year and cattle dying by natural death are also by no means insignificant. About 2,900 maunds of raw hides and 1,000 maunds of skins can be had in a year. Thus the district produces 8,900 maunds of raw hides and 3,000 maunds of raw skins annually. The chief markets of raw hides and skins are Panwari, Mahoba, Maudaha, Rath, and Sumerpur, where a pretty large quantity of raw hides and skins partly local and partly imported are sold. About 6,000 maunds of raw hides are annually imported from the Native States of Charkhari and Chhattarpur and the adjoining states of Alipura and Garrauli. The district keeps about 8,900 maunds of raw hides and 1,200 maunds of raw skins for local consumption and exports about 6,000 maunds of raw hides and 1,800 maunds of raw skins to Cawnpore and Agra annually. The prices of raw hides and skins current in the market are as under :—

Cow hide	Rs. 4 to Rs. 5-0-0	} According to weight and size.
Buffalo hide ..	..	..	Rs. 5 to Rs. 6-0-0
Goat and sheep skin	..	..	Rs. 1 to Rs. 1-8-0

(ii) *Tanning*.—The census of 1911 recorded 766 male and 121 female tanners as actual workers and 249 males and 26 females as partially agriculturists (249 agriculturist families= 124 families of actual workers). These persons tan raw hides only. A tanner family tans 10 to 12 hides of different size in a month. The tanners work 8 months in a year, and can tan about 8,900 maunds of hides, out of which about 7,566 maunds are consumed locally and about 1,334 maunds exported to the Native States of Charkhari, Chhattarpur and the adjoining jagirs of Alipura and Garrauli. The imports of tanned leather in the

district are negligible. The current prices of locally tanned leather are as under :--

Cow leather	Rs. 5-8-0 to Rs. 6-8-0
Buffalo leather	Rs. 6-8-0 to Rs. 7-8-0

The tannins used are "ghont" fruits and "dhavai" leaves. The process of tanning is similar to what has been described in the Monograph on "Leather and Leather Working" by Mr. Walton and is not repeated here. The average earnings of a tanner family amount to Rs. 15 to Rs. 18 a month.

Another class of tanners known as "Chikwas" tans skins. "Chikwas" are primarily meat-dealers and carry on the tanning of skin as a subsidiary occupation. Roughly speaking about 1,200 maunds of skins are tanned locally.

(iii) *Shoe-making*.--In the year 1911 the district returned 851 male and 100 female shoe-makers as actual workers and 287 males and 13 females as partially agriculturists (287 agriculturists=143 actual workers). The shoe-makers work for about 250 days in a year and utilize about 5,566 maunds of tanned leather for shoe-making and about 2,000 for the manufacture of "Pakhals" and "Charsas." A shoemaker family turns out about 32 pairs of shoes of different size and quality in a month. Thus on an average 254,464 pairs of shoes (Hindustani design) of different sizes and quality are prepared annually by the shoe-makers of the district. The average earnings of a shoe-maker's family vary from Rs. 15 to Rs. 20 a month.

The following are the chief centres of tanning and shoe-making cottage industries in the district :--

Tahsil.	Town or village.
Kulpahar	1. Kulpahar.
	2. Supa.
	3. Panwari.
	4. Jaitpur.
	5. Ajnar.
	6. Mahwabandh.
Mahoba	1. Mahoba.
	2. Srinagar.
	3. Goendi.
	4. Kabrai.

Tahsil.	Town or village.
Maudaha	1. Maudaha.
	2. Muskara.
	3. Sayore.
	4. Patanpur.
	5. Kharela.
Hamirpur	1. Bhonra.
	2. Kaithi.
	3. Terha.
	4. Pachkura Khurd.
	5. Sumerpur.
	6. Kurara.
Bath ..	1. Rath.
	2. Majhgawan.
	3. Mamna.
	4. Jalalpur.
	5. Belgaon.

5.—Miscellaneous.

Pan (betel leaves).—Mahoba, owing to its "pan" industry, its long-standing prestige and its position on the railway, enjoys a considerable trade. It exports "pan" to the value of about 16 lakhs of rupees a year to Benares, Lahore, Peshawar, Naini Tal, Kumaun, Rajputana, and other parts of Northern India. "Pan" has been cultivated at Mahoba for centuries, one mohal being called the "Dariba." The cultivation is entirely in the hands of one caste called Tambolis and its extent in Dariba varies from 50 to 18 bighas, the usual average being 33. The number of separate gardens varies from 55 to 20 and they are never larger than 2 bighas and never smaller than 5 biswas. The produce is famous throughout Northern India. The creeper is carefully sheltered from the heat of the sun by a trellis work overlaid with leaves and the rent paid varies from Rs. 50 to Rs. 30 per bigha. The final product is extremely valuable. The current rate of pans is Re. 1 per "Dholi" of about 300 pans (betel leaves). Close to Mahoba is a village of Maharajpur in the Chhattarpur State, which is also famous for the extensive cultivation of "pan."

Mahoba imports a large quantity of "pan" from Maharajpur and then exports them to other places. The idea of utilizing "pan" for producing "pan essence" has not been considered by the Tambolis of Mahoba and I presume that "pan" industry coupled with "pan essence" industry would be a still more paying concern and is worth trying.

6.—Oils.

Oil-pressing.—Of all the oil-seed crops, sesamum and linseed are the crops of growing popularity in the district. Sesamum occupies 13·5 per cent. of the kharif area and linseed 7·4 per cent. of the spring harvest. Sesamum flourishes in kankar soil and is almost the invariable crop in newly-broken-up waste. Linseed is grown in kabar and mar soils. Rape-seed and castor seed are not extensively sown in the district and their outturns are negligible. The annual outturn of the principal oil-seeds grown in the district, their exports and local consumption, are as under :—

	Annual outturn.	Local consumption.		Exports.	
		For oil-crushing.	For other purposes.	Quantity.	Places of consignment.
		Mds.	Mds.	Mds.	Mds.
Sesamum ..	301,501	86,820	4,835	109,846	Cawnpore, Calcutta, Bombay, Harpalpur.
Linseed ..	76,500	21,705	3,295	52,500	Ditto.
Mahwa seed ..	85,000	20,000	Nil	15,000	Ditto.
Cotton seed ..	96,283	Nil	35,000	61,283	The Punjab, chiefly Amritsar.

The prices of oil-seeds in season are as under :—

	Rs.	Rs. a. p.
Sesamum...	... 6	to 6 8 0 a maund.
Linseed ...	... 6	„ 6 12 0 „
Mahwa seed	... 3	„ 5 0 0 ,
Cotton seed	... 3	„ 3 8 0 „

Cottage industry of oil-pressing.—The census of the year 1911 recorded 1,210 males and 1,526 female Telis as actual workers and 475 males and 210 females as partially agriculturists (475 agriculturist families taken as equivalent to 237 families of actual workers). Generally a Teli family works with a country *ghani* having an average capacity of crushing 10 seers of oilseeds per day. A Teli family would crush sesamum for 8 months in a year, linseed and mahwa-seed for about 2 months and other oil-seeds like rape-seed and castor seed occasionally. Roughly speaking, 1,447 Teli families each working with a country *ghani* crush the following quantities of oil-seeds in a year :—

Sesamum	..	...	86,820	maunds.
Linseed	...	....	21,705	"
Mahwa seed	...	...	20,000	"

The Telis working on country *ghanis* driven by bullocks are able to obtain 33 per cent. of oil. Hence the said Teli families produce oils and oil-cakes in a year as under :—

		Oil.	Oil-cakes.
		Mds.	Mds.
Sesamum	...	28,940	57,880
Linseed	...	7,235	14,470
Mahwa seed	...	6,666	13,300

The prices of oils and oil-cakes current in the markets of the district are as under :—

	Rs.	a.	p.	Rs.	a.	p.	
Linseed oil	19	0	0	to	20	0	0 a maund.
Sesamum „	20	0	0	„	20	8	0 „
Mahwa „	13	8	0	„	15	0	0 „
Rape-seed „	21	0	0	„	22	0	0 „

Sesamum and linseed oil-cakes sell at Rs. 4 a maund. Oils and oil-cakes produced in the district are mostly consumed locally. Cattle are generally fed on sesamum oil-cakes and occasionally on rape-seed and linseed oil-cakes. Mahwa oil-cakes are used as fuel by the Telis.

The average earnings of a Teli family amount to 8 annas per day. The details are as under :—

Expenditure.		Receipts.	
	Rs. a. p.		Rs. a. p.
Ten seers of sesamum at Rs. 6 a maund ..	1 8 0	Three and a half seers oil at Rs. 21 a maund ...	1 13 5
Maintenance charges of bullock ...	0 6 0	Six seers of oil-cake at Rs. 4 a maund...	0 9 7
Interest on borrowed capital ...	0 1 0		
Total ...	1 15 0	Total ...	2 7 0

Net saving annas 8 a day.

The following are the chief centres of the cottage oil-pressing industry in the district :—

Tahsil.	Village or town.
Hamirpur ...	(1) Pandhari, (2) Chandpurwa Buzurg, (3) Surauli, (4) Tehra, (5) Deogaon, (6) Bidokhar, (7) Ingotha, (8) Chhani Buzurg and Khurd, (9) Sumerpur, and (10) Kurara.
Mahoba ...	(1) Mahoba, (2) Srinagar, (3) Goendi, (4) Makerbai, (5) Kabrai.
Kulpabar ...	(1) Kulpabar, (2) Jaitpur, (3) Ajua, (4) Panwari, (5) Mahwa Bandh, (6) Mudhari.
Rath ...	(1) Rath, (2) Imiliya, (3) Jaria, (4) Atrar, (5) Majbgawan, (6) Belgaon, (7) Bora.
Maudaha ...	(1) Maudaha, (2) Muskara, (3) Kharela, (4) Sayor, (5) Sisolar, (6) Patanpur.

Each Teli purchases his stock of oil-seeds in advance for a year, but has not all the necessary capital required for his stock and has to borrow money from local bankers. On an average a Teli family requires oil-seeds worth Rs. 400 to Rs. 450 in a year and has to pay at least 12 per cent. per annum interest on loan. The formation of a few joint purchase societies on co-operative basis in places like Mahoba, Rath, Sumerpur, would relieve the oil-crushers of their indebtedness and help them to get their

stock of oil-seeds cheap and at a low rate of interest. At present no oil mill exists in the district, but there exists ample scope at least for one oil mill in the district. Mahoba, with a considerable trade in oil-seeds and a railway station, is the most suitable place for setting up an oil plant.

7.—Textiles.

(A) Cotton.

(i) *Raw cotton.*—The most valuable kharif crop in the district is cotton, the area under which averages 17·8 per cent. of the total autumn harvest. It is principally grown in "parwa" and "kabar" soils. The district grows only white flowered country cotton. Its staple is 0·9" and 0·85" and trade classification Kulpahar and Rath cotton. The annual outturn of kapas is 131,408 maunds, out of which about 10,000 maunds of kapas are exported to Harpalpur and the rest is ginned locally. The district imports about 22,941 maunds of kapas from the neighbouring states of Charkhari and Chhattarpur.

(ii) *Ginned cotton.*—The district gins about 144,349 maunds of kapas, out of which 20,880 maunds are ginned by the Kulpahar Ginning Factory and about 123,469 maunds by hand. The ginning percentage of kapas is 33 per cent. Hence the district produces 48,116 maunds of ginned cotton in a year, out of which 21,960 maunds are exported to Cawnpore and Bombay, about 9,618 maunds are used for spinning and about 16,538 maunds consumed locally for other purposes.

Prices.—The prices are, kapas Rs. 10-8 to Rs. 12-8 and cotton Rs. 30 to Rs. 32-8 a maund.

(iii) *Yarn.*—The census of 1911 recorded 1,022 families as actual workers engaged on spinning and 480 families as partially agriculturists (480 agriculturist families taken as equivalent to 240 families). To this should be added 5,150 female spinners subsequently shown as weavers helping their husbands in weaving. Hence the total number of spinners in the district is 6,412 persons. A spinner spins about 4 chataks a day. The hand-made yarn is uneven and it is difficult to ascertain its

counts, but usually it is below 10s. A spinner works for about 10 months in a year. The district produces about 9,618 maunds of hand-made yarn in a year and imports annually about 9,670 maunds of mill yarn from Cawnpore, Ahmedabad, Agra and Bombay. Generally yarn of 10s. to 12½s. is imported. All the important towns in the district have got shops of imported yarn. The weavers purchase yarn from them on credit and have to pay 4 annas per bundle more than the current rate. One month's credit is allowed to them for payment. The machine-made yarn is imported in the shape of bales (a bale consists of 40 bundles and each bundle 5 seers of yarn costing Rs. 8 to Rs. 9).

(iv) *Weaving*.—In the year 1911 the number of actual workers engaged on weaving was 4,194 males and 4,616 females, and that of partially agriculturists was 1,257 males and 1,068 females (1,257 agriculturist families taken as equivalent to 628 families of actual workers). The weavers work for 8 months in a year. During rainy season work is discontinued as it is said that yarn cannot be sized properly. On an average a weaver family consumes 5 seers of yarn in a week and turns out 4 to 6 pieces of cloth of different varieties and quality. Weaving is done on throw-shuttle hand-loom which have been fully described in the monograph on cotton and cotton fabrics. Weavers consume 9,618 maunds of hand-made yarn and 9,670 maunds of mill-made yarn in a year and produce about 21,602 maunds of cloth (1 maund 10 seers yarn as equivalent to 1·16 seers cloth).

The district also imports different varieties of cloth from Cawnpore, Indore, Beawar, Bombay, Calcutta to the value of about 10 lakhs of rupees a year. The average earnings of a weaver family amount to Rs. 15 to Rs. 20 a month.

The district has the following important centres of weaving :—

Tahsil.	Village or town.
Mahoba	... (1) Mahoba, (2) Srinagar, (3) Bilbai, (4) Sijehri, (5) Bilkhi, (6) Goendi, (7) Markarbai, (8) Surha.
Kulpahar	... (1) Kulpahar, (2) Bhateora Kalan (3) Supa, (4) Kilana, (5) Bharwara, (6) Ikthwan, (7) Panwari, (8) Dulara, (9) Chauka, (10) Jaitpur, (11) Mudhari, (12) Ajuar.

Tahsil.	Village or town.
Hamirpur	(1) Bhawinya, (2) Kaithi, (3) Pandhari, (4) Gahtauli, (5) Surandi Buzurg, (6) Pachkhura Buzurg, (7) Thera, (8) Bidokhar, (9) Ingotha, (10) Chhani Khurd and Buzurg, (11) Mawaijar, (12) Sumerpur, (13) Kurara, (14) Kusmara.
Rath	(1) Rath, (2) Chandot, (3) Imiliya, (4) Atrar, (5) Dhosi, (6) Sirsai, (7) Kopra, (8) Bilgaon, (9) Purehti, (10) Kachhwa, (11) Jaria, (12) Bira, (13) Majhgawan.
Maudaha	(1) Maudaha, (2) Patanpur, (3) Kharela, (4) Muskira, (5) Sayar, (6) Sisolar, (7) Bewar, (8) Behuni Tola, (9) Baswari, (10) Artara.

(B) Wool.

The cattle census of the year 1920 recorded 31,332 sheep in the district. Each sheep is sheared thrice a year, viz., in *Phagun*, *Katik*, and *Asarh*, and yields about 12 chataks of wool. Hence the district produces about 587 maunds of raw wool in a year and imports about 200 maunds from the neighbouring states of Charkhari and Chhattarpur and from the jagirs of Alipura, Garrauli and Bihat. Out of 787 maunds, about 700 maunds of wool, partly carded and partly raw, are exported to Bhadoi, Mirzapur and Jhansi, and the rest is utilized locally by the Gadariyas in the manufacture of coarse blankets. The prices of raw wool are as under :—

	Rs.	s.	p.	
1st quality	...	25	0	0 a maund.
2nd "	...	23	0	0 "
3rd "	...	21	8	0 "

The following are the wool-producing villages in the district.—

Tahsil.	Village.
Hamirpur	... (1) Birkhera, (2) Chandpurwa Buzurg, (3) Jalala, (4) Kundaura, (5) Mawaijar.
Mahoba	... (1) Srinagar, (2) Sijwaha, (3) Dhilkwaha.

Tahsil.	Village.
Kulpahar	... (1) Mudhari, (2) Jaitpur, (3) Ajnar, (4) Sagrinia, (5) Sigaun, (6) Marwara, (7) Pasanabad, (8) Chhatesar, (9) Lorhpur.
Maudaha	.. (1) Maudaha, (2) Patanpur, (3) Muskara.
Rath	... (1) Chandot, (2) Ichaura, (3) Islampur (4) Magrot, (5) Jaria, (6) Maghgawan, (7) Mamna, (8) Kopra, (9) Pahra.

The Gadariyas as a class tend sheep and also manufacture rough and coarse blankets. They are dispersed all over the district. They work on narrow hand-looms and produce blankets either for themselves or for the use of their zamindars.

The district does not produce blankets on a large commercial scale.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

The district is almost exclusively devoted to agriculture and manufactures are conspicuously absent. Its chief trade consists in exporting the agricultural raw products and importing the manufactured articles. Its resources are limited and it does not offer any particular facilities for the development of industries. It can only help in supplying adjoining districts of Banda, Jhansi and Jalaun with raw material, particularly oil-seeds and raw hides. The district has three important cottage industries of tanning, weaving and oil-crushing. It is fortunate that a District Co-operative Bank is being established and would be able to finance the cottage industries if societies of weavers, tanners and oil-crushers are formed on co-operative lines. A co-operative society of tanners already exists at Sumerpur in the Hamirpur tahsil. The district affords facilities for the development of co-operative societies amongst the cottage industrialists. The industrial possibilities which struck me during the course of my inquiries are as under :—

- (1) Mahoba already exports carded wool to several places. It would be certainly to the advantage of wool exporters if they set up a machine for carding wool.
- (2) The manufacturers of soapstone wares at Gaurhari would make large profits if they arrange to export their unused chips and blocks of soapstone in the shape of powder to Calcutta and other places where its demand exists. At present heaps of chips and blocks are being wasted and once the manufacturers are put into touch with the firms exporting the soapstone powder to oversea countries, the so-called unprofitable waste would give them a decent income.

- (3) The exports of surplus oil-seeds can be utilized locally and an oil mill can be set up in the district for crushing oil-seeds. Mahoba would be a suitable place for an oil mill.
- (4) An attempt should be made to maintain the only art industries of the district—the manufacture of gold fish and brass idols. Boys can be sent to the Arts and Crafts School, Lucknow, and there easily learn the manufacture of brass idols, and the manufacturers should put themselves in communication with the Emporium to extend their sales.
- (5) It appears feasible that a few more gins may find employment as the amount of cotton produced in the district is very large in comparison to that which is ginned by power at present.
- (6) The manufacture of pan essence may commend itself to some small enterpriser.

CHAPTER IV.

STATISTICS.

1.—Leather.

Tanning and shoe-making.

Raw material—

1. *Local*—Production of raw hides and skins.
Raw hides 8,900 maunds.
Raw skins 3,000 „
2. *Imports*—Quantity—6,000 maunds raw hides.
Places of origin—Charkhari and Chhattarpur states,
Alipura and Garrauli jagirs.
3. *Exports*—Quantity—6,000 maunds raw-hides.
1,800 „ skins.
Places of consignment—Cawnpore and Agra.

Manufacture—Cottage industry of tanning :—

	Number of persons employed.	
	Males.	Females.
Actual workers ...	766	121
Partially agriculturists ...	249	26
<i>Outturn</i> —8,900 maunds leather (hides). 1,200 „ „ (skins).		
<i>Wages</i> —8 annas a day per tanner family.		

Cottage industry of shoe-making :—

	Number of persons employed.	
	Males.	Females.
Actual workers ...	851	100
Partially agriculturists ...	287	13
<i>Outturn</i> —254,464 pairs of shoes.		
<i>Wages</i> —8 annas to 10 annas a day per shoe-maker family.		

2.—Oil-pressing.

*Raw material—*1. *Outturn—*

Sesamum	...	...	201,501 mds.
Linseed	...	...	76,500 "
Mahwa seed	...	...	35,000 "
Cotton seed	...	...	96,233 "

2. *Exports—*

	Quantity.	Place of consignment.
Sesamum	... 109,846 mds.	} Cawnpore, Calcutta, Bombay and Harpalpur.
Linseed	... 52,500 "	
Mahwa seed	... 15,000 "	
Cotton seed	... 61,233 "	The Punjab, chiefly Amritsar.

3. *Local use—*

	For oil-crushing.	For other purposes.
Sesamum	... 86,820 mds.	4,835 mds.
Linseed	... 21,705 "	2,295 "
Mahwa seed	... 20,000 "	...
Cotton seed	... ..	35,000 "

Cottage industry of oil-pressing—

	Number of persons employed	
	Males.	Females.
Actual workers	... 1,210	1,526
Partially agriculturists	... 475	210

Outturn—

	Oil.	Oil-cakes.
Sesamum	... 28,940 mds.	57,880 mds.
Linseed	... 7,235 "	14,470 "
Mahwa seed	... 6,666 "	13,300 "

*Wages or profit—*8 annas a day per Teli family.

3.—Textiles.

(A) *Cotton.**Raw material—*

*Outturn—*131,408 maunds kapas.

*Imports—*22,941 maunds kapas from Oharkhari and Ohhattarpur states.

Exports—10,000 maunds kapas to Harpalpur.

Local use—144,349 maunds kapas.

Ginned cotton—

Outturn—48,116 maunds.

Exports—21,960 maunds to Cawnpore and Bombay.

Local use—26,156 maunds.

Cottage industry of spinning—

Number of persons employed—6,412 persons (spinners).

Outturn—9,618 maunds hand-made yarn.

Earnings—4 annas a day per spinner.

Cottage industry of weaving—

Number of persons employed.

	Males.	Females.
Actual workers ...	4,194	4,616
Partially agriculturists ...	1,257	1,068

Outturn—21,602 maunds of cloth.

Wages or profit—Fuzees 15 to Rs. 20 a month per weaver family.

Kulpahar Cotton Ginning and Pressing Factory.—The factory is situated at Kulpahar and owned by Messrs. Shahpurjee Dhanjee of Cawnpore. It is equipped with 29 double roller gins (capacity of each gin 12 maunds kapas per day of 12 hours) worked by a steam engine of 44 H. P. and one hand press for baling (capacity 30 to 32 bales per day of 12 hours). The working season of the factory lasts from 1st December to 31st January. The factory partly works on its own account and partly on commission. The commission charges for ginning are 8 annas per maund and for pressing Re. 1 per bale of 3½ to 3¾ maunds ginned cotton. Other particulars will be found in the statement given below :—

Year.	Annual consumption of kapas.	Annual production of ginned cotton and cotton seeds.	Remarks.
1921-22 ..	Mds. 20,880	Mds. 6,960 (ginned cotton) 13,920 (cotton seed)	The factory exports its cotton to Cawnpore and cotton seeds to the Punjab.

INDUSTRIAL SURVEY.

(B) Wool.

Raw material—

Outturn—587 maunds raw wool.

**Imports—200 maunds from Charkhari and Chhattari
states, Alipura and Garrauli jagirs.**

Exports—700 maunds to Bhadoi, Mirzapur and Jhansi.

Local use—87 maunds.

CHAPTER V.

DIRECTORY.

(1) *List of chief manufacturers of stonewares at Gaurhari.*

Ragtubar Lodhi, Gaurhari, tahsil Kulpahar.
 Parichat Lodhi, ditto.
 Brij Lal Lodhi, ditto.

(2) *List of cloth firms.*

Lala Shanker Lal, Mahoba.
 Lala Sukh Lal, Mahoba.
 Lala Behari Lal, Mahoba.
 Lala Raja Ram, Mahoba.
 Pandit Narayan Tiwari, Mahoba.
 Seth Gajadhar, Mahoba.
 Pandit Gayadin, Mahoba.
 Lala Munui Lal, Mahoba.
 Lala Bhagwan Din, Mahoba.
 Munni Lal, Beni Prasad, Maudaha.
 Ganga Prasad, Ram Narain, Maudaha.
 Babu Ram, Mathura Prasad, Maudaha.
 Bhakku Pariah, Maudaha.
 Munni Lal, Newal Kishore, Kulpahar.
 Bebari Lal, Sheocharan Lal, Kulpahar.
 Nathu Ram, Mathura Prasad, Kulpahar.
 Dhani Ram, Har Prasad, Kulpahar.
 Lala Chakru Lal Vaishya, Hamirpur.
 Lala Jagannath Vaishya, Hamirpur.
 Lala Kamta Prasad and Malhi Vaishya.
 Lala Raja Ram Vaishya, Hamirpur.

(3) *List of factories.*

Kulpahar Ginning and Pressing Factory, Kulpahar.
 Rai Bahadur Sheocharan Tiwari's Ginning Factory,
 Mahoba,

(4) List of chief yarn shops in the district.

Buchailal Ramdayal, Kulpahar.
 Dhani Ram, Harprasad, Kulpahar.
 Debi Das, Buchai Lal, Kulpahar.
 Lala Ganga Prasad Vaishya, Hamirpur.
 Ganga Prasad, Ram Narain, Maudaha.
 Lala Shankar Lal, Mahoba.
 Lala Sukhlal, Mahoba.
 Lala Behari Lal, Mahoba.

(5) List of chief exporters of pan (betel leaves) at Mahoba.

Ghasitemal, Mahoba.
 Debi Din, Mohaba.

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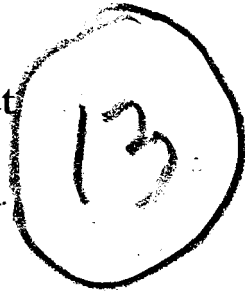
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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Hardoi District

By

B. K. GHOSHAL, M.A.



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CONTENTS.

	Page.
FOREWORD	i—ii
CHAPTER I—	
1. General features of the district	1
2. Crops	<i>ib.</i>
3. Canals	<i>ib.</i>
4. Industries	<i>ib.</i>
5. Lakes	2
6. Minerals	<i>ib.</i>
7. Rivers	<i>ib.</i>
8. Ferries	3
9. Railways	<i>ib.</i>
10. Fairs	4
11. Markets	<i>ib.</i>
12. Roads	7
CHAPTER II.—Resources—	
1. Agricultural	9
2. Animal	17
3. Mineral	21
4. Resources in labour and capital	22
CHAPTER III—	
1. Art industries (Arsi making)	23
2. Building materials	<i>ib.</i>
3. Chemicals	24
4. Food-grains	27
5. Hardware	<i>ib.</i>
6. Leather	31
7. Miscellaneous—	
(a) Basket making	33
(b) Smoking tobacco	<i>ib.</i>
8. Oil	34
9. Pottery	36
10. Textiles	<i>ib.</i>
11. Wood work	43

	Page.
CHAPTER IV.—Industrial possibilities—	
CHAPTER V.—Statistics—	
1. Building materials	47
2. Chemicals	48
3. Food-grains	<i>ib.</i>
4. Hardware	49
5. Leather	50
6. Miscellaneous (smoking tobacco)	51
7. Oil	52
8. Textiles	<i>ib.</i>
CHAPTER VI.—Directory—	
1. Banks	58
2. Technical Schools	<i>ib.</i>
3. Factories	<i>ib.</i>
4. Brick-kilns	<i>ib.</i>
5. Lime factories	<i>ib.</i>
6. Saltpetre refineries	59
7. Flour mills	<i>ib.</i>
8. Iron lock makers of Bilgram	<i>ib.</i>
9. Sandal oil distillers	<i>ib.</i>
10. Weaving centres	<i>ib.</i>
11. Yarn dealers	<i>ib.</i>
12. Weaving factories at Sandila	60
13. Tat-patti dealers and centres of weaving	<i>ib.</i>
Bibliography	<i>ib.</i>

FOREWORD.

HARDOI is an agricultural district with very few manufactures of any importance. What few remnants there are of old industries are declining and require better organization, improved methods and experimentation to enable them to stand in competition with present day works. Cotton fabrics are woven in Sandila and Bilgram and Sandila Store is well organized. But a number of throw-shuttle looms may still be seen at work throughout the district. Fly-shuttles have to be demonstrated to them and an agency created to make them available at reasonable rates and on easy modes of payment. The introduction of small warp laying and sizing machines is only a question of time, and as soon as they can be put on market there will spring up many small factories for handloom weaving. The only root cause which leads to the failure of many of them is the want of proper agency for warp laying and sizing. Sanai is grown in a good area and tat-pattis are manufactured from it for use as pakhars or as bags for pack-animals. But the pattis are very narrow and wider looms have to be introduced. The dyeing of sann yarn has also to be introduced. Glazed amrit-bans, decorated and coloured gharas, flower pots, and similar other articles are made for local use, but the glaze requires improvement and the vessels are not properly baked. Experiments have to be conducted to evolve an useful type of furnace suited to the village kumhars and colours and dyes easy of manipulation for their use. Domestic utensils are made in a few places of heavy inelegant type, and Bilgram manufactures locks and pandans. But the latter lack in finish and the industry requires the introduction of labour-saving machines, while the domestic utensils are manufactured on earthen moulds which every workman makes for himself. He has also to work his own lathes. All work is done by hand. The result is inefficiency and ineconomy, resulting in high prices. More permanent moulds and better appliances like lathes, etc., have to be evolved after continued experimentation of their working.

Shoes of Hindustani type are made in some places, but the leather is not well tanned. Co-operative societies are wanted for shoe-makers of Mallawan, Bilgram and Sandi.

The manufacture of tobacco requires a more powerful disintegrator than the hand mallet. A little sandal-wood used to be distilled, but of late the product has deteriorated, while the cost of manufacture has increased. A better still is the crying need of this industry. Parts of country carts are made of crude, heavy type, and the little wood carving requires improvement in designs and execution. In short, the manufactures are deteriorating and many are dying out. Experiments should be performed by the Industrial Chemist to Government or at the Research Institute to improve the methods and evolve better types of stills, furnaces, etc., and the industries require to be organized on a better footing. Capital and advertisement are required in no few lines.

The Hardoi report is drawn upon lines similar to those of Lucknow and has been revised by Mr. S. T. Gadre, Industrial Chemist to Government, United Provinces. My thanks for the trouble he has taken are due to him. I have also to acknowledge the help rendered by the following gentlemen :—

1. Khan Saheb Kabool Ahmad of Sandila.
2. Pandit Raj Narain Wali, Manager, District Co-operative Bank, Hardoi.
3. Mr. Prayag Dutt Seth of Pihani.
4. Mr. Ishwar Chandra, Naib-Tahsildar, Sandila.
5. Tahsildar Saheb of Sandila.
6. Tahsildar Saheb of Hardoi.
7. Tahsildar Saheb of Bilgram.
8. Tahsildar Saheb of Shahabad.
9. Pandit Mul Narain, Manager, Modhoganj Ginning and Pressing Factory.
10. Mr. B. K. Ghare of the Agricultural College, Cawnpore.

CHAMPA RAM MISRA.

5th July, 1923.

CHAPTER I.

INTRODUCTION.

1. General features of the district.

Hardoi is the westernmost district of Oudh. Its soil is generally alluvial and rich, but large areas in Bilgram, Shahabad and Hardoi tahsils are precariously subject to floods from rivers which often overflow their banks damaging the kharif crops.

2. Crops.

In rabi wheat is the most important crop. Among the non-food crops opium is very important still. In kharif cotton and sugarcane are the important crops. There are three ginning and pressing factories which have stimulated the growth of cotton, but unfortunately only the short stapled variety is grown.

3. Canals.

There are no canals yet and the jhils and wells are the main sources of irrigation. The Sarda Canal is expected to serve a large portion of the district. Two branches—the Hardoi branch and the Lucknow branch—will pass through the heart of the district. The Hardoi branch will traverse the part of the district between the Sai and the Garra and will join the old Ghaziuddin Haideri Canal, while the Lucknow branch will pass through the parganas of Pindwara, Gopamau, Balamau and Sandila.

4. Industries.

Cotton weaving is the most important industry of the district. Some very good articles like table cloths (musajjar) and checks are made at Sandila where the weavers are well organized on co-operative lines. Hempen goods are also made to some extent at Shahabad and Manjhia and Bakharria in Hardoi tahsil. These include hemp pieces called "tat-patti" for curtains, pakharis or cart cover for loading grain and for gonis or bags for pack animals.

Metal utensils of Bhagwantnagar-Mallawan are good, but only moulded articles of kaskut are made.

At Bilgram the lohars make locks and pan boxes of brass sheet. Buckets of iron and agricultural implements are made by the village lohars at several places.

Leather goods are not important, although there is a number of chamars in Bilgram and Mallawan making Nagra and Selim shahi shoes out of the locally tanned material. To meet the growing demand for boots and shoes a few workmen have begun to manufacture them at Hardoi, Sandila and Bilgram.

At one time there were several indigo factories working and one at Udhranpur called Colonel Tulloch's factory did some work during the war, but none is working at present.

There are three ginning factories, three flour mills and several brick-kilns and lime factories in the district.

Madhoganj, Hardoi and Balamau are important markets for agricultural produce and are all situated on the railway line.

The exhibition at Hardoi has been discontinued and the Ramlila Fair of Bilgram has lost its former importance and has ceased to give the impetus to local workmen which it used to do in the past.

5. Lakes.

The district is studded with lakes and swamps. The biggest is the Dahar Lake near Sandi.

6. Minerals.

Kankar is the only mineral deposit of the district and is found near usar lands. It is found in big blocks also.

7. Rivers.

- (1) The Ganga, partly navigable but not popular for trade navigation.
- (2) The Ramganga.
- (3) The Sai.
- (4) The Gurra.
- (5) The Gumti.
- (6) Sukheta.
- (7) Behta.

8. List of Ferries.

River.	Village.	Name of Ferry.
Gumti	... Sarai	... Dudnamaughat.
Garra	... Bazpur Naktaur	... Naktauraghat.
Gumti	... Beniganj	... Rajghat.
Ditto	... Mahuakota	... Mahadewaghat.
Ditto	... Katghara	... Hãtiaghat.
Ditto	... Bhatpur	... Bhatpurghat.
Ditto	... Deokala	... Birsinghpurghat.
Ditto	... Kulhabar	... Kulhabarghat.
Garra	... Piparia	... Pipariaghat.
Ditto	... Pali	... Palighat.
Ditto	... Sandi	... Rajghat.
Sendha	... Harpalpur	... Nilmanghat.
Ganges	... Katri Chichpur	... Jalesarghat.
Ditto	... Hyderabad	... Kasmahurghat.
Ditto	... Rampur Majharia	... Majhariaaghat.
Ditto	... Meora	... Meoraghat.
Ditto	... Ishrapur	... Rajghat.
Ditto	... Magruha	... Mehndighat.
Ditto	... Kutbapur	... Gujarghat.
Ditto	... Shahpur	... Anbinghat.
Ramganga	... Deosipur	... Deosipurghat.

9. Railways.

The Oudh and Rohilkhand Railway.

Section.	Distance.	Railway station.
(1) Main Line	... 85 miles	Rahimabad, Sandila, Dalelnagar, Balamau, Baghauli, Masit, Karna, Hardoi, Kaurha, Behta-Gokul, Todarpur, Anjhi, Aigawan.
(2) Balamau—Auhadpur branch.	31 miles	Balamau, Atwa, Madhoganj, Bilgram, Auhadpur (Sandi).
(3) Balamau-Sitapur branch.	12 miles	Balamau, Arseni, Beniganj.

10. List of Fairs.

Village.	Name of Fair.	Date.
Thok Chauhan ...	Babaji ...	Chait and Kuar Su 10th.
Dahi ...	Tirath Dadhich ...	Aghan Badi 6th.
Bilgram ...	Dasehra ...	Kuar Sudi 10th.
Sandi ...	Mangla Debi ...	Chait Badi 8th.
Adampur ...	Bramhabrat ...	Bhadon, Jana Ashtami.
Simaria ...	Kalkadevi ...	Last week of P and Baisakh.
Haiderabad ...	Ganga Ashnan ...	Kartiki Puranmash
Girdharpur ...	Ramlila ...	Kuar Sudi 1st 10th.
Nagwa ...	Paikarma Tirath...	Phagun Sudi 3rd.
Umrari ...	Ditto ...	Ditto.
Bhaingaoon ...	Hattia Haran ...	Bhadon every Su day.
Haraiya ...	Piakarma Tirath...	Phagun Sudi 3rd.
Pihani ...	Ramlila ...	Kuar 1st to 15th.
Pihaini ...	Janm Ashtami ...	Bhadon.
Kulhabar ...	Gumti Ashnan ...	Kartiki Puranmash

11. List of Markets.

Locality.	Market days.
Hardeoganj ...	Sundays and Wednesdays.
Pachkora ...	Ditto.
Tikri ...	Mondays and Thursdays.
Udra Jung Bahadur ...	Ditto.
Udra Ujagar Singh ...	Fridays and Saturdays.
Sauharia Buzurg ...	Sundays and Thursdays.
Gopamau ...	Ditto.
Gondarao ...	Ditto.
Karimnagar Saidapur ...	Ditto.
Behta Murtiza Buksh ...	Mondays and Thursdays.
Hunsepur ...	Ditto.
Victoriaganj ...	Mondays and Fridays.
Burkherwa ...	Ditto.
Tandiaon ...	Ditto.
Bhadeora ...	Ditto.

Locality.	Market days.
Baghault Station ...	... Tuesdays and Saturdays.
Ahrori ...	... Ditto.
Manjhia ...	... Ditto.
Hariharpur ...	... Wednesdays and Saturdays.
Thamarwa ...	... Ditto.
Mawaia ...	... Ditto.
Bazpur Naktaura ...	... Mondays and Fridays.
Bawan ...	... Mondays and Thursdays.
Manpur ...	... Wednesdays and Saturdays.
Behta Dhera ...	... Mondays and Fridays.
Shahabad ...	... Daily.
Udhranpur ...	... Sundays and Thursdays.
Basitnagar ...	... Wednesdays and Saturdays.
Gujdar ...	... Tuesdays and Fridays.
Anjhi ...	... Fridays.
Lakhnaur ...	... Tuesdays and Saturdays.
Maikpur ...	... Ditto.
Mansurnagar ...	... Ditto.
Pihani ...	... Mondays and Thursdays.
Dahilia ...	... Sundays and Wednesdays.
Pindarwa ...	... Ditto.
Rabha ...	... Ditto.
Sadatnagar ...	... Sundays and Fridays.
Raigain ...	... Mondays and Fridays.
Abdullahnagar ...	... Tuesdays.
Karawan ...	... Wednesdays and Saturdays.
Pali ...	... Thursdays and Saturdays.
Siwaijpur ...	... Tuesdays and Saturdays.
Inayatpur ...	... Sundays and Thursdays.
Nasauli Damar ...	... Ditto.
Sikandarpur ...	... Tuesdays.
Bilgram Mianganj... ..	... Mondays and Thursdays.
Bilgram Gailao ...	... Sundays and Wednesdays.
Nekhpur Newada ...	... Wednesdays and Saturdays.
Dalha ...	... Tuesdays and Fridays.
Mallawan-Bajiganj ...	... Ditto.
Mallawan Katra ...	... Mondays and Thursdays.
Mallawan Bhagwantnagar ...	... Sundays and Wednesdays.
Mallawan Nitganj... ..	... Saturdays.
Kursat ...	... Ditto.

Locality.	Market days.
Madhoganj ...	... Tuesdays and Fridays.
Jalalabad ...	... Ditto.
Purbanwan ...	... Wednesdays and Saturdays.
Ishrapur ...	... Ditto.
Puranmau ...	... Ditto.
Matiamu ...	... Sundays.
Shahpur Sahebganj ...	... Tuesdays and Fridays.
Raghopur ...	... Mondays and Thursdays.
Dharampur ...	... Ditto.
Aliganj ...	... Mondays and Fridays.
Khasaura ...	... Sundays and Wednesdays.
Arwal ...	... Sundays and Thursdays.
Khairuddin ...	... Tuesdays and Saturdays.
Sandi ...	... Sundays, Mondays, Tuesdays, Wednesdays and Fridays.
Badaria ...	... Saturdays.
Simaria ...	... Mondays and Fridays.
Chochpur ...	... Ditto.
Adampur ...	... Tuesdays and Saturdays.
Palia ...	... Ditto.
Sandila ...	... Ditto.
Hathaura ...	... Ditto.
Huja ...	... Ditto.
Mandar ...	... Ditto.
Beniganj ...	... Tuesdays and Fridays.
Raison ...	... Ditto.
Dewari ...	... Ditto.
Gadaura ...	... Sundays and Wednesdays.
Behudarkalan ...	... Ditto.
Kothawan ...	... Ditto.
Berwa ...	... Mondays and Thursdays.
Ghausganj ...	... Ditto.
Kachchauna ...	... Ditto.
Allahabadpur ...	... Ditto.
Anauramau ...	... Ditto.
Jasu ...	... Ditto.
Malaiyan ...	... Ditto.
Asai Azampur ...	... Wednesdays and Saturdays.
Malehra ...	... Ditto.

Locality.	Market days.
Khajauna ...	Wednesdays and Saturdays.
Girdharpur ...	Mondays and Saturdays.
Gundwa ...	Sundays.
Goni ...	Wednesdays.
Pawayan ...	Sundays and Wednesdays.
Deokali ...	Ditto.
Madauli ...	Mondays and Thursdays.
Sikrauri ...	Ditto.
Bharawan ...	Ditto.
Dhakauni ...	Tuesdays and Saturdays.
Newada ...	Ditto.
Atrauli ...	Ditto.
Jagsara ...	Ditto.
Kalyanmal ...	Ditto.
Mahgaon ...	Mondays and Thursdays.
Rahimabad ...	Tuesdays and Fridays.
Pirkapur ...	Ditto.
Balamau ...	Ditto.
Shamspur ...	Ditto.

12. List of Roads.

(a) METALLED ROADS.

(i) Provincial.

Lucknow, Sitapur, Shahjahanpur road, for three miles only.

(ii) Local.

Hardoi to Sandi.
 Hardoi to Bilgram.
 Hardoi to Bargadiaghat and Nimsar.
 Hardoi to Pihani.
 Shahabad to Anjhi railway station.
 Circular roads in Hardoi.
 Madhoganj to Mallawan.

(b) LOCAL UNMETALLED ROADS (2ND CLASS).

Lucknow to Hardoi via Sandila.
 Bilgram to Unao.
 Sandila to Beniganj.

Sandila to Mallawan.

Pihani to Chandpur railway station.

Bilgram to Kanauj.

Hardoi to Saighat and Farrukhabad.

Shahabad to Pali and Farrukhabad.

Sandi to Farrukhabad.

Pihani to Gopamau.

Sandi to Baghauli.

Masit to Nimkhar.

Sandila to Bangarmau.

Pihani to Shahjahanpur.

Pihani to Mahumdi.

Besides these there are several roads of 3rd, 4th, 5th and 6th classes, the total length of which is about 340 miles.

CHAPTER II.

RESOURCES.

1. Agricultural.

General.

Hardoi has some very convenient markets for trade in agricultural produce. The market at Madhoganj is the biggest and commands the produces of Sitapur, Farrukhabad, Unao and Hardoi districts. The markets at Hardoi, Balamau and Beniganj are also important.

The villagers have to sell their goods anyhow to realise ready cost and are often the loser. It would be very good if co-operative grain stores could be started to advance them money on the security of their goods so that they might take advantage of the market fluctuations.

(a) RABI CROPS.

(i) *Barley.*

Area cultivated.—203,413 acres.

Outturn.—2,949,489 maunds.

Exports.—1,900,000 maunds.

Prices.—At harvest time 10 seers 4 chataks to 10 seers 6 chataks per rupee. At present 11 seers and 11½ seers per rupee.

Export duty.—Free.

Import duty.—Free elsewhere, and 20 per cent. in France, 28 per cent. in Germany, 37 per cent. in United States of America and 13 per cent. in Japan.

The unit of sale locally is the maund, but export quotations are sent from Karachi at so much per candy of 655 lbs., and the usual allowance for refraction is 3 per cent. Shipment is made in bags of about 2 to 2½ maunds. Export of barley abroad is not excessive and most of what goes out is sent to the United Kingdom. The internal consumption is very large.

(ii) Gram.

Area cultivated.—159,787 acres.

Outturn.—1,757,657 maunds.

Exports.—About 500,000 maunds.

Prices.—8 seers 12 chataks and 8 seers 14 chataks per rupee at harvest and 10 to 12 seers now.

Export duty.—Free.

Import duty.—Free elsewhere, except in Germany 18 per cent. and Japan 16 per cent.

It is not an important article of export and only 13,500 maunds were sent to the ports from Madhoganj, the biggest market in the district. The unit of sale is the maund and the unit of shipment is the bag of 2 cwt. in Karachi and 2 maunds in Bombay.

(iii) Linseed.

Area cultivated.—681 acres.

Outturn.—4,086 maunds.

Export.—About 13,500 maunds.

Import.—About 10,000 maunds.

Linseed comes from the neighbouring districts. Its cultivation last year was poor.

Prices.—About 5 seers a rupee at harvest. Now $5\frac{1}{4}$ seers per rupee, but even then there are no purchasers. The prices of linseed in London fell, and as the crushing of this seed is not common in India its stock remained unsold.

Export duty.—Free.

Import duty.—Free in all countries, except Italy 18 per cent.

There are two recognized varieties—yellow and brown, but the bulk of linseed grown here is the brown variety. Linseed is grown solely to meet foreign demand. The plant which could have been used for fibre has now degenerated and has developed a branching habit. Linseed oil is used for the manufacture of glycerine for explosives and for margarine and other edible oils.

It is shipped in bags of about 2 maunds.

(iv) Peas.

Area cultivated.—6,699 acres.

Outturn.—53,592 maunds.

Prices.—Rupees 5 per maund.

Export duty.—Free.

Import duty.—Same as for gram.

The unit of sale is the maund and of shipment the bag of about 2 maunds.

(v) *Poppy.*

Area cultivated.—6,354 acres.

Outturn of the seed.—31,770 maunds.

Exports.—About 12,000 maunds.

Prices.—At harvest time 4 seers 14 chataks. Now 4 seers 10 chataks per rupee.

Export duty.—Free.

Import duty.—The seed is imported free in England, Belgium, France and Holland, while Germany levies 6 per cent.

The "white" variety is common. The seed is used for food and very little is crushed. The oil is very valuable for paints and artificial butter. The crop is grown under Government supervision as the seed pods produce opium. Crude opium is collected at the different centres in the district and sent to Ghazipur Factory.

The unit of sale of the seed is the maund and shipments are made in bags of 140 lbs. to 168 lbs. Opium is shipped and sold wholesale in chests of 140 lbs.

(vi) *Rape and mustard.*

Area cultivated.—87 acres.

Outturn.—609 maunds.

It is sown as a mixed crop and so no separate figures are available.

Exports.—27,000 maunds. Of this some is imported and the balance is produced in the district.

Prices.—At harvest time yellow 5½ seers per rupee, red 5½ seers per rupee. Now yellow 4 seers 2 chataks. Red 5 seers 11 chataks.

Export duty.—Free.

Import duty.—Free in all countries except Hungary 13 per cent., Germany 9 per cent., and Italy 9 per cent.

Rapeseed is the most important oilseed both for internal and foreign trade. Its demand in Europe has not fallen, nor have the prices. India is the principal source for the supply of Europe and the United Provinces take a prominent place among the exporting provinces. Both the yellow and brown varieties are available. For internal consumption mustard is preferred. The unit of sale is the maund here, but shipments are made at Bombay in bags of 168 to 182 lbs. and at Karachi in bags of 164 to 206 lbs.

The area under oilseeds in Hardoi is very small, but there is a considerable trade in them at the important markets.

(ii) *Tobacco.*

Area cultivated.—1,586 acres.

Outturn.—11,103 maunds.

Exports.—Practically nil as the quantity and quality are both very poor.

Prices.—Rupees 13 to Rs. 15 per maund ordinary.
Rupees 18 Maghi. Maghi variety is not common in Hardoi.

Tobacco of the district is not at all good and the most ordinary kind of leaf is obtained. There are no famous places for smoking tobacco, not to speak of eating or chewing tobacco which requires still better variety.

(iii) *Wheat.*

Area cultivated.—207,194 acres.

Outturn.—2,693,522 maunds.

Exports.—About 1,500,000 maunds.

From October, 1920 onwards exports were limited to 40,000 tons a year bought at Rs. 6-2-6 a maund free on rail Karachi.

Export duty.—Free.

Import duty.—Free in England, Belgium and Holland 40 per cent in France, 37 per cent. in Germany, 41 per cent. in Italy and 19 per cent. in Japan.

Wheat is packed in gunny bags of 2 maunds each and shipped in similar bags with slight variation in weight at the different ports. The Corn Trade Association demands only 2 per cent. of other grains mixed with wheat, but no dirt;

while in Karachi the prices are quoted for a candy of 656 lbs. in which there is 5 per cent. of barley, 3 per cent. of dirt and 30 per cent. red wheat.

(b) KHARIF CROPS.

(i) Arhar.

Area cultivated.—122,535 acres.

Outturn.—919,013 maunds.

Export.—550,000 maunds for internal trade.

Prices.—Varied from 11 to 12 seers per rupee.

This is very largely used as food (dal). The stalk is used for making baskets.

(ii) Bajra.

Area cultivated.—124,941 acres.

Outturn.—874,587 maunds.

(iii) Cotton.

Area cultivated.—20,000 acres.

Outturn.—50,000 bales of cleared cotton or about 27,000 maunds. The figures are based on the outturn per acre of the Hardoi district as tested by the Agricultural department.

Imports.—About 25,950 maunds.

Exports.—52,950 of cotton, including the total amount ginned.

Export of ginned cotton.—9,464 maunds.

Prices.—Raw cotton Rs. 10 to Rs. 12 per maund.

Ginned and pressed Rs. 30 to Rs. 33 per maund.

Rupees 325 per candy of 10 maunds at Bombay.

The prices are controlled from Bombay.

Export duty.—Free.

Import duty.—Free in all countries, except Italy 2 per cent. and Russia 49 per cent.

Cotton is the most important industrial crop of the district and there are three ginning and pressing mills. Cotton of the surrounding districts also comes to Hardoi or Madhoganj for being ginned and pressed.

Some merchants find it profitable to send out unginned cotton to Bombay and Cawnpore where it is ginned and pressed.

The variety grown is the short stapled, but the Agricultural Farm at Hardoi is doing its best to introduce the long stapled variety.

(iv) *Cotton seed.*

Production in the mills.—About 25,000 maunds.

Prices.—9½ to 12 seers per rupee.

(v) *Groundnut.*

Area cultivated.—506 acres.

Outturn.—4,554 maunds.

Prices.—Rupees 8 to Rs. 11 per maund during the cold season.

Exports.—About 2,000 maunds.

Export duty.—Free.

The importance of groundnut as an edible is increasing every day.

(vi) *Juar.*

Area cultivated.—63,929 acres.

Outturn.—511,432 maunds.

(vii) *Maize.*

Area cultivated.—24,632 acres.

Outturn.—714,328 maunds.

It is exported to some extent, but the quantity exported is very small now on account of a better supply in Europe from Argentine.

(viii) *Rice.*

Area cultivated.—80,466 acres.

Outturn.—885,126 maunds.

Exports.—About 350,000 maunds, mostly to neighbouring cities.

Prices.—Rupees 8 to Rs. 10 per maund according to quality.

Export duty.—3 annas per maund of 82 lbs.

Import duty.—Free in England, Belgium and Holland, 23 per cent. in Austria, 50 per cent. in France, 30 per cent. in Germany, 66 per cent. in Italy, 115 per cent. in Russia, 41 per cent. in United States of America and 26 per cent. in Japan.

Like the rest of the United Provinces, Hardoi has very little share in the foreign trade of rice and its rice goes very rarely beyond the province.

(ix) *Sanai*.

Area cultivated.—2,950 acres.

Outturn.—20,650 maunds.

Prices.—Rupees 12 to Rs. 18 per maund according to quality. Sanai is "*Crotalaria Juncea*" and is sown as a mixed crop and as border to arhar and other crops. The available quantity is used up in the district for rope making and for weaving taf-patti.

(x) *Sugarcane*.

Area cultivated.—15,422 acres.

Outturn.—508,926 maunds of gur.

Exports.—250,000 maunds to Unao, Shahjahanpur.

Prices.—4½ to 5½ seers per rupee (last year).

Export duty.—Free.

Import duty.—Free elsewhere, 18 per cent. in United States of America.

Gur and desi sugar from the Khandsar process is largely made in the district. There is a factory at Shahabad which produces cane juice by power and the proprietor was contemplating the installation of a complete sugar making plant.

The villagers produce some juice by means of the iron bolhus which Mr. Perfect of Bahramghat (Bara Banki) and Shiva Dayal and others of Delhi supply on hire. The charges vary from Rs. 25 to Rs. 50 per season. The juice is boiled in iron pans which are also obtained on hire.

(xi) *Til or sesamum*.

Area cultivated.—255 acres.

Outturn.—893 maunds. This figure is for til sown separately.

Export.—About 2,500 maunds. The excess comes from the neighbouring districts and is grown as a mixed crop.

Prices.—Rupees 8 a maund.

Export duty.—Free.

Import duty.—Free elsewhere, except Germany 6 per cent., Italy 16 per cent. and Russia 10 per cent.

The unit of sale is the maund and it is shipped in bags of about 2 maunds each.

Its oil is very valuable for margarine and for hair oil.

(c) MARITIME FREIGHTS FROM THE INDIAN PORTS.

(i) Cotton.

	£	s.	d.	
From Calcutta to London ...	3	7	6	per ton.
From Bombay to Liverpool ...	1	1	8	„ „

(ii) Linseed.

From Calcutta to London ...	3	7	6	per ton.
From Calcutta to New York ...	3	5	5	„ „
From Calcutta to Antwerp ...	2	15	0	„ „, of 50 c. ft.
From Calcutta to Hamburg ...	2	15	0	per ton.

(iii) Rapeseed.

From Calcutta to London ...	3	14	6	per ton.
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(iv) Rice.

From Calcutta to London ...	3	2	6	per ton.
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(v) Wheat.

From Calcutta to London ...	3	2	3	per ton.
From Bombay to London ...	1	19	4	„ „
From Karachi to Liverpool ...	1	7	5	„ „

N.B.—These rates are correct up to April, 1921 and taken from the Review of Trade of 1920-21.

(d) VEGETABLES AND FRUITS.

(i) Vegetables.

Potato is the most important crop among vegetables, and is sown in 4,730 acres out of 5,475 acres under vegetables. Bilgram and Hardoi tahsils have large areas under potato which is exported to Lucknow and other big cities. Potato grown here is all consumed as vegetable and is not available for starch making.

(ii) Fruits.

Mangoes of Shahabad are famous like those of Malihabad in Lucknow district. A very good business is done in the season in exporting them. There are three private nurseries which sell grafts of innumerable varieties of mangoes, though only a few are famous, e.g., khasulkhas, safeda, langra, dasehri, mohanbhoj. The grafts have shown a tendency towards deterioration which may be attributed to unscientific methods of grafting. The owners of the nurseries should put themselves in touch with the Superintendent of Government Gardens for better methods.

The area under mango groves is roughly estimated at 35,234 acres, and these have about 528,510 trees.

*(e) FIBRES.**Munj.*

Munj grows wild on river banks and in marshy places near the rivers and is grown on the boundaries of mango and mahua groves as a protection against trespass by cattle.

Area under munj is roughly 1,760 acres.

Bilgram has 900 acres and Sandila tahsil 800 acres.

Villages where munj grows abundantly are :—Gopamau and Kaimnagar in Hardoi tahsil; the whole of the Katiari pargana in Bilgram tahsil, and Sonetipur, Bhitpur, Aima, Fatehpur, Beniganj and Pipri in Sandila tahsil.

Munj Patawar is used largely for thatching the roofs of houses and munj proper is used for twisting ban. The Kahars and Gorias are engaged in this work, but are not organized. Beniganj market gets about Rs. 25 worth of ban in the season every market day. Ban for export to other cities is collected by byoparis at this market. There is not much demand for munj mattings in the district.

2. Animal resources.*(i) Bones and horns.*

These are available from dead and slaughtered bovine and ovine animals. These are collected together by the bone pickers who deposit their collections near railway stations where the byopari has an open air dépôt. When wagon loads are

collected they are booked in railway wagons to the destinations. During the last year the new factory that has been installed at Magarwara made most of the purchases. Horn is not classed separately by the bone milling factories, but good horns of buffaloes are used to some extent by the comb makers of Lucknow. Horns and bones are used for making various articles like buttons, handles for knives, sticks, etc., combs, penholders, etc., in Europe and also in Dacca, but not so in the United Provinces.

(a) *Bone quantity available from bovine animals.*—13,203 maunds, taking 20 seers per animal.

Quantity available from ovine animals.—2,342 maunds.

All this, however, cannot possibly be collected.

(b) *Horn.*—Horns of 26,407 animals are available.

(i) *Hides and skins.*

(a) *HIDES.*

Hides from slaughtered animals (slaughter-houses),—
1,407 hides.

Others (including dead and privately slaughtered).—18,000 hides.

(The second figures are an approximation from the study of the village markets where hides are brought.)

Hides used up locally.—About 9,000.

Exported.—10,407 hides.

Export duty.—15 per cent. *ad valorem.* A rebate of 2/3 of the duty is granted on shipments to destinations within the British Empire upon production of evidence that the hides and skins have been tanned within the British Empire.

Import duty.—Raw, free everywhere.

Prices—

Buffalo hides.—Medium size Rs. 4 to Rs. 6-8.

Large size Rs. 6 to Rs. 9.

Cow hides.—Green salted Rs. 3 to Rs. 5.

Dry Rs. 2 to Rs. 3.

The term "hides" is used for the skins of bovine animals like buffaloes and cows. The hides available at Hardoi used to be mostly exported, but owing to the slump in the market the business has decreased; but consignments to Cawnpore and Calcutta for Indian tanneries are still sent. The local use of

the hides is for "buckets" at irrigation time and charsa for sole and even upper leather of desi shoes.

Hides for export are either dry salted with sajji and common salt or merely dried in the sun. Freshly skinned hides treated with salt are called green salted and fetch a higher price.

For export purposes these hides are classed as "North-Westerns" or "Agras," and the various grades or qualities of hides are differentiated by the following terms:—

1. *Slaughtered*.—The hides without yoke marks or cuts.

The best of these are marked "c" (which used to denote the hides of the animals slaughtered in the military slaughter-houses of the Government).

2. *Dead*.—Hides with slight cuts or marks.
3. *Rejections*.—With more cuts and marks.
4. *Double rejections and treble rejections*.—Badly damaged.

The unit of sale in the local markets is a single hide, but for export purposes the unit is a bundle of 20 hides or weighing 20 lbs.

Freight.—£3-14-6 per ton from Calcutta to London.

The flaying of hides is very defective and the European purchasers are resorting to hides of the New World for this reason. Germany used to purchase the inferior qualities, but her doors are still shut owing to financial troubles and the slump in the Indian market continues.

(b) SKINS.

Skins from animals slaughtered in municipal and notified areas.—7,072 skins.

Others (including dead and privately slaughtered).—20,000 skins.

Export.—18,000 skins.

Export duty.—Same as for hides.

Import duty.—Free.

Prices.—10 annas to Re. 1-4 each.

Freight.—Same as for hides.

Season.—Hides and skins are in the best condition from January to May.

The slump in the market due to a fall in demand from America and France has affected the skin dealers more adversely than hide dealers because the demand for skins in India is not much.

The unit of sale is 100 skins.

They are classed "North-Westerns" or "Agras" and are graded according to size. The best skins called "heavy" are 36 inches long and 21 inches wide; sizes smaller than 25 inches are called kid skins.

Skins of goats are collected by local men and exported through arhatias of Hardoi City. Sheep skins are mostly consumed in the province for the manufacture of lining leather used for boots and shoes and for making cheap coloured pumps and slippers.

There is a slump in the market, of which the following are some of the causes:—

- (1) Heavy stocks in foreign markets built up during the trade of 1919-20.
- (2) Stoppage of war works leaving a large surplus stores for the market.
- (3) Financial troubles in Central Europe shutting up India's best purchasers.
- (4) America and England trying to fall back upon their own resources (Review of Trade, 1921, and India in 1921-22).

The last is an ominous sign. The best remedy is to start a well equipped modern tannery to consume the provincial surplus. A large quantity of tanned leather and leather goods is annually imported by the province so that the tannery will have a ready market if its product be good.

Import of boots and shoes in the provinces:—

		Quantity.	Value.
		Pairs.	Rs.
1913-14	...	3,295	7,926
1917-18	...	713	2,835
1918-19	...	638	3,205
1919-20	...	669	3,778
1920-21	...	1,071	10,583

(iii) *Wool.*

There are about 62,668 sheep in the district. Sheep rearing is common in the lowlands, especially in Bilgram tahsil.

Quite decent woollen blankets used to be made at Sandi and Adampur, but the quality has deteriorated and very few really good weavers can now be found in the district.

The wool is very coarse and not suitable for finer materials.

Production from living sheep.—94,002 lbs. or 1,146 maunds taking $1\frac{1}{2}$ lb. per sheep annually in the three shearings.

Production from slaughtered sheep.—3,155 lbs. or $38\frac{1}{2}$ maunds taking $\frac{1}{2}$ lb. per skin.

Prices.—Rupees 20 to Rs. 25 per maund.

Quantity used locally.—23,520 lbs.

Quantity exported.—73,637 lbs.

Export duty.—Free.

Import duty.—Free everywhere, except United States of America, 8 per cent.

The unit of sale is the maund and shipment is made in bales of 3 cwts.

Wool is collected by chikwas who act as agents of byoparis, and the latter supply wool to the jails, Cawnpore mills or export merchants. The major portion of Hardoi wool is all consumed in the province.

3. Mineral resources.(i) *Kankar.*

Kankar is the only mineral deposit of the district yet known. Kankar is found in many places, especially in usar tracts, at varying depths. Kankar is mainly in demand for metalling roads, and its demand for lime mills is also increasing. At present Kankar is being dug out from the following places:—Atwa, Rotia, Khudaria, Pirawan, Bhikha-pur, Bahrapur, Sandi and Durgaganj in tahsil Bilgram; Gajnakhera, Bazidnagar and Mansurnagar in tahsil Shahabad; Kamrauli, Bansra, Kasrawan, Pauntera, Hardoi, Baghauri, Asa, Bharail, Badauli and Murliganj in Hardoi tahsil, and Sandila. Kankar in blocks is found near Atwa.

(ii) *Reh.*

Total area in the district.—703 acres.

The largest deposits are found in Bilgram tahsil of which Bilgram itself has got 60 acres out of a total of 634 in the entire tahsil.

Sajji is made out of reh deposits and is used by washermen and tobacconists. No other use of sajji is made in the district.

4. Resources in labour and capital.

Capital.—The Central Co-operative Banks of Hardoi and Sandila are the banking concerns run on modern lines. The mahajans are not organized and most of them carry on petty money-lending business.

There are no banks or money-lenders helping industrial concerns financially to any appreciable extent.

Public Works department and the Sarda Canal department are employing considerable unskilled labour. They feel some difficulty during the harvest, sowing and irrigation times.

There is a seasonal demand for labour in the three ginning factories, but up to this time there has been no trouble.

The wages which the unskilled labourers get are higher than the average income of a tenant with a small agricultural holding.

CHAPTER III.

GENERAL DESCRIPTION AND SUGGESTIONS FOR IMPROVEMENT OF THE VARIOUS DISTRICT INDUSTRIES.

1. Art Industries.

Arsi making.—There are a few good goldsmiths in the district. At Gopamau in Hardoi tahsil five of them make silver and gold arsis (mirror fixed on a ring worn in thumbs of ladies). Their output is not large and they now make to order. The place was famous for arsi in the Nawabi days.

2. Building materials.

(a) *Brick-kilns.*—There are brick-kilns at Hardoi, Pihani, Pali, Shahabad, Mallawan, Madhoganj, Bilgram, Sandila, Beniganj and Gopamau. The kilns are usual "Bull" kilns which are fired with coal and cinder and ordinarily equipped with iron, and in temporary ones with brick, chimneys. Besides these, there are the Pajawa or desi kilns. The number of 1st class bricks produced in the latter is smaller. In the mufassil large flat and curved bricks for wells and roofing are more common and fetch better prices.

Organization.—The loniyas make kutcha bricks by means of moulds getting Re. 1 to Re. 1-8 per 1,000 bricks made. Land is taken on lease by kiln owners. The royalty varies from Rs. 150 to Rs. 250 per bigha according to locality.

Marketing.—Bricks are supplied in the kiln bullock carts according to orders previously booked. The rates varied from Rs. 15 to Rs. 20 per 1,000.

Profits.—The business is paying and leaves Rs. 5 to Rs. 6 per 1,000 bricks sold and the gross profits easily come to 70 per cent. The Canal department is getting bricks made on contract, supplying its own coal. The contractors entered into cut-throat competition and most of them are suffering a loss.

Season.—The business is very dull during rains.

(b) *Lime mills.*—Kankar lime is made in all places where there are brick-kilns. Kankar is burnt in permanent brick-kilns, or in the old fashion by making a pyramidal structure

of alternate layers of fuel and kankar. Burnt kankar is ground in power-driven disintegrators or bullock-driven stone chakkis moving in a circular net. There is only one power-driven mill at Hardoi. They employ the old process of burning which leaves unburnt kankar and a large amount of dirt is mixed with lime. The lime mills work when they have got orders in hand. The charges Rs. 35 to Rs. 40 per 100 c. ft. are very high, and it often pays to get lime from Lucknow.

The organization and the marketing system are the same as for brick-kilns. The works remain idle during the rains.

3. Chemicals.

(a) *Manufacture of crude saltpetre.*

Crude saltpetre is manufactured in several villages by the loniyas. Saltpetre (Potassium Nitrate) mixed with common salt and other impurities is extracted from nitrous earth scraped and dug out from the village surroundings. It is collected in some mango grove near the village. Here the loniya digs out pits in which he mixes the nitrous earth with water sufficient to dissolve the salts. When saltpetre and salts are dissolved the liquid is transferred to filters. The filter is a very crude type of bamboo frame work covered thickly with mango leaves through which the mother liquor now trickles down into a pit. The filtered mother liquor is then put in pans (karhais) and evaporated, leaving behind a dirty powder with shining crystals of crude saltpetre.

All this crude saltpetre goes to refineries for being separated from salt and other impurities.

Organization.—The right to scrape nitrous earth from the villages is leased out by the zamindars to contractors or loniyas. The royalty is nominal now as the business is not very paying. It comes to Re. 1-8 to Rs. 2 per big village. The contractors sublet the lease to the loniyas who have to get a licence from the Salt department on payment of Re. 1. The contractors get about 1/3rd of the produce from the loniyas who take the remaining 2/3rds and from it meet the expenses of manufacture. The manufacturers cannot sell crude saltpetre in the market because there is salt mixed with it.

Marketing.—The mahajans dealing in crude saltpetre and the agents of the refineries purchase the entire stock from the loniyas. The prices are regulated from Calcutta which is the

biggest market for saltpetre. The rates for crude saltpetre varied last year from Rs. 3 to Rs. 4 per maund.

Season.—From February to June.

Suggestions.—During the war the demand for saltpetre rose on account of its use in the manufacture of munitions and other purposes as its supply from Germany was cut off. But the demand has fallen again considerably. The makers of fireworks in India and China are now the biggest purchasers of Indian product. For war ammunition cordite is replacing ordinary gunpowder. The fall in demand has affected the trade very much and the loniyas are giving up the work. With the increase of food preserving and glass making industries in India there should be demand here for saltpetre. We should try to compete with the imported variety which sells cheaper.

Production.—There are 152 pans employing about 300 men and producing about 2,052 maunds of crude saltpetre.

Profit.—A loniya having one karhai can produce 13 maunds per season.

		Rs.	a.	p.
Price of 13 maunds at Rs. 4	...	52	0	0
To mahajan or zamindar	...	17	5	0
Other expenses, e.g., making of pits, filter, and wear and tear of the karhai or pan	... ..	4	0	0
Wages, if any	...	15	0	0
		<hr/>		
Total	...	36	5	0
Balance as his profit	...	15	11	0
		<hr/>		

(b) *Saltpetre refining.*

There are two kothis or factories for refining saltpetre in Hardoi, but only one is working.

Refining is carried out in licensed premises and the refiner has to pay a licence fee to the Government which is Rs. 50 for the factory. The principle employed in the kothi is to heat to the boiling point a solution of crude saltpetre when the potassium nitrate dissolves and the common salt contained in it crystallises out.

Lona or nitrous earth is mixed with water in pits, and in this solution crude saltpetre is dissolved. The whole is put in boiling pans. Salt crystals are deposited at the bottom of the boiling pans and are constantly taken out, washed, recrystallised and stored in a room to be disposed off as desired by the Government. The boiling concentrated liquid with potassium nitrate dissolved in it is transferred to wooden crystallising boxes or earthen pots or *nand* by means of wooden pipes. The crystals are at first dirty yellow and have to be washed with the least amount of fresh water before clear colourless crystals are obtained. The waste water contains some saltpetre which is recrystallised.

This is the saltpetre that comes to the market. The purity of the crystals is not uniform. Five per cent. impurities are allowed as pure, but 10 per cent. to 15 per cent. are not uncommon.

Usually 18 to 25 seers of saltpetre crystals are produced from a maund of crude saltpetre.

Organization.—The kothiwala himself supervises the works and has two to three paid men to manage them.

The contractor and loniyas bring cartloads of crude saltpetre to the refineries and the prices are settled there according to the percentage of pure saltpetre expected to be obtained from the crude saltpetre and according to the prevalent prices of saltpetre at Calcutta. The Calcutta prices in their turn are regulated by demands in China and the Assam Tea garden.

Marketing.—The major portion of the produce goes to Calcutta export merchants.

The unit of sale is the maund and that of shipment a bag of 224 lbs.

Production.—The factory produced about 3,000 maunds of refined saltpetre.

Profits—

		Rs. a. p.
Cost of 1 maund of crude saltpetre	...	4 0 0
Cost of refining it	...	1 4 0
		<hr/>
Total	...	5 4 0
		<hr/>

This will give about 25 seers of saltpetre at Rs. 9 per maund, i.e., Rs. 5-10, giving a profit of 6 annas.

Season.—The work is brisk during March to June when the loniyas are busy making crude saltpetre.

4. Food-grains.

Flour mills.—There are no flour mills on a big scale, but three small flour mills at Hardoi grind wheat for customers—either private consumers or dealers. Two of these mills are worked by steam-engines and one by an oil-engine.

They do job work only and have only one mill each with an average capacity of 30 maunds per day. Wheat flour of these mills is rarely exported and is all consumed in the district.

Organization.—The mills are all privately owned and are run by engine drivers. There is a munshi to keep accounts.

Wheat that comes to the mills is weighed before grinding and the flour is weighed again before it is given back to the customer. There is some loss in weight— $\frac{1}{4}$ seer in 5 seers.

The charges are 10 to 12 annas per maund.

5. Hardware.

(a) *Manufacture of domestic utensils.*

Moulded metal utensils of mixed metals, like kaskut (an alloy of zinc and copper) and gilat (an alloy of zinc and lead) are made at four places in the district: Malawan, Shahabad, Hayatganj in Sandila tahsil and Hardoi Bazar, but the utensil making of Malawan-Bhagwantnagar in Bilgram tahsil alone is worth mentioning. There are seven shops there and 25 men are engaged.

Raw material is mostly remelted old utensils of kaskut and gilat. These are either bartered for new utensils by the manufacturers or purchased from itinerant dealers who barter them for new vessels. The manufacturer purchases them by weight and pays 10 to 12 annas per seer or half the price of manufactured articles. The description of the process of manufacture has been described by Mr. Dampier in his monograph on brass wares.

Organization.—A family usually constitutes a karkhana and labourers are engaged only for the lathe and the bellow of the furnace. When outside artisans are engaged by any family, they work as partners sharing the profit in proportion to their respective capital outlay.

The moulds are also made by the artisans so that they do not work the furnace during the time taken up in preparing the moulds. Thus they cannot use the furnace for more than four times per month in summer and winter and twice a month in the rainy season. These manufacturers work as wage earners also, preparing things for mahajans or dealers. They are paid wages at Rs. 25 to Rs. 35 per maund according to the nature of the work and this includes the loss in weight at $2\frac{1}{2}$ seers per maund, due to burning off of the metal, the wages of the lathe man, turner and fileman, if engaged at 8 annas, Re. 1-8 and Re. 1-4 per day respectively, fuel at Rs. 2 per maund if metal melted, and other miscellaneous expenses.

The mahajans supply raw material which is weighed, and the worker has to supply an exact amount of ready-made articles.

Marketing—Some of the manufacturers take their things to the neighbouring important markets. They also sell or give articles for commission sale to the itinerant merchants. There is no method of advertisement, but the purchasers easily recognize the articles of a particular place by their characteristic shape and design.

Profits—His gross profits are just half the price of the finished articles, and from this he has to meet the wages of the workmen (usually he engages only the lathe-man and the furnace man), loss of metal, etc.

The following will give an idea presuming that he has to pay for all workmen :—

	Rs.	a.	p.
Price of 1 maund of raw material ...	25	0	0
Loss of $2\frac{1}{2}$ seers of metal in melting ...	1	9	0
Fuel	2	0	0
Latheman at 8 annas for 2 days ...	1	0	0
Furnaceman	0	8	0
Turner and Fileman	2	8	0
Moulds, say 35 lotias at Rs. 10 per 100 moulds ...	5	8	0
Moulder (the headman)	3	0	0
Miscellaneous	2	0	0
Total ...	43	1	0

The price of about 36 seers of ready-made articles at Re. 1-6 per seer equals Rs. 49-8-0.

Profit—Rs. 6-7-0 per maund.

He can thus save about Rs. 30 per month after meeting all possible expenses

Production.—There are ten shops in the district employing about 35 men and producing material weighing 142 maunds annually.

Very little of the manufactured articles leave the district, except a little to Kanauj and Lucknow.

Suggestions.—The industry is showing a tendency towards decline—at least it is stagnant. It is due to two causes: (1) change in the taste of the people who now want light elegant articles, (2) the fact that these utensils are heavy and cost much. People cannot afford to buy them now so much as they used to do in the past. But still the conservatism of the orthodox section, the facility of exchange and the readiness of the mahajans to advance ready money on the security of the utensils are strong factors in favour of the industry.

The manufacturers should have a co-operative organization for the purchase of better lathes, raw materials, other improved appliances, whenever possible, and for the sale of finished products on wholesale rates.

(b) *Iron works.*

There are no iron works on a factory system, but there are still the remnants of the old cottage workers who made Hardoi famous. Pihani in Shahabad tahsil was called the "Damascus of Oudh". Swords and firearms were made at Pihani and other places, but the Arms Act killed the industry and now the few artisans that still exist have to be content with making knives, etc. They can no longer temper steel—as a matter of fact the art of tempering steel is now unknown. At Bilgram the iron workers make locks, small heart shaped boxes of brass sheet and some instruments like Maccroni making machines, etc. The workers of Bilgram are quite good at their work and they owe this to the impetus given by Hakim Syed Bande Raza Saheb, the life Secretary of the Ram Lila Fair. He used to encourage these people to make things which could get a market in that fair.

Besides locks and a few arms, the iron workers of the district produce only the ordinary agricultural implements such

as are made in every district, The iron workers of the following places are above the average and can make good things to order—Safargarhi, Pitauli, Jhanjauli, Gajee, Tikari and Rahimabad in Sandila tahsil, Bilgram and Durgaganj in Bilgram tahsil, Pihani Masphana, Chatila in Shahabad tahsil; and Hardoi, Chaunsa, Bharawan, Gopamau, Behta Murtaza Buksh and Railwayganj in Hardoi tahsil.

Remarks.—Cottage workers have little hope of success in the iron industry and even the famous Sheffield cutlers had to adopt power driven machinery by organizing themselves on co-operative basis. This would have been suggested here also, but in no place are the workers found in, sufficiently large numbers to make such an arrangement possible.

(c) *Iron moulding.*

At Madhoganj the ginning factory has got a furnace and all kolhus are being moulded for the mills. They will do moulding for others also. Chhedda's Flour Mill at Hardoi has also a furnace, but it has not been successfully worked yet.

(d) *Lock making at Bilgram.*

Iron locks with four lever arrangements are made at Bilgram, but there are only four good workmen. They make brass "pan" boxes (dibias) also. Prayag, Ishwari and Baldeo are good workmen.

Iron and brass are obtained from Madhoganj.

Locks of various sizes are made. The commonest ones cost 8 to 10 annas each and a workman can produce three to five such locks in a day. Bigger locks cost Rs. 2 to Rs. 3 each and one workman can make one such lock in a day or three in two days.

Profits.—A lock selling for Rs. 2 will cost 12 annas to the workman, leaving Re. 1-4 as profits or wages. Smaller locks will cost 2 annas 6 pies and sell for 8 annas.

Marketing.—They get orders from dealers and pedlars of Hardoi, Shahjahanpur, Unao, etc. There is no regular system of advertisement, and instead of engraving their names they engrave "Sita Ram".

Suggestions.—The workmen are good, and I saw one or two excellent devices in the locks by way of double keys with secret openings.

They need capital and a few hand labour saving devices like the punching machines. With more capital they can increase their scale of production and compete with other lock makers. Their locks require a much better finish to be able to compete with Aligarh.

(e) *Brass 'pan' box making.*

The iron workers make brass heart shaped boxes for keeping betels. They are made of thin sheets with floral designs engraved on the lid. The joints are soldered with lead. The prices are 8 annas, Re. 1 and Re. 1-4 each, and a man can make eight to ten in a day. The demand for them has fallen very much and they are being replaced by cheap German and Japan nickel-plated thin iron sheet boxes. The ornamental work on the lid and the soldering of the joints used to be very well done in the past, but now they are clumsy.

6. Leather.

(a) *Tanning.*

There are no modern tanneries in the district and leather for desi shoes is either tanned by the village chamars on old lines or comes from Cawnpore. The sole leather is invariably of local manufacture, but the upper leather for boots and shoes and desi shoes of superior quality comes from Cawnpore.

The chamars tan leather for shoes as well as for water buckets. Lime, saji and babul bark are used for tanning. Babul bark and saji are locally obtained, only lime has to be brought from outside. The chamars put in as many hides in the pit as their finances would allow and it takes about 20 days to tan one set. There are about 100 tanning pits in the district engaging about 800 men. They are scattered all over the district. The important places are Jajeepur, Jamunipur, Birwa Sandila, Beniganj, Sandi and Mallawan.

Organization.—The family is usually the unit of an organization and all the members of the family are engaged in the work.

Marketing.—These tanned hides are used for the manufacture of desi shoes, buckets, etc., by the tanners themselves, and in some cases they are sold to mochis also in the village markets.

Season.—The work stops during rains, harvesting and sowing times.

(b) *Leather working.*

Desi shoes are made in almost every village where there are a number of chamars, but the village markets get their supply mainly from the following places:—Shahabad, Pihani, Pali, in Shahabad tahsil; Jamunipur, Malehra and Sandila in Sandila tahsil; Bilgram, Sandi and Mallawan in Bilgram tahsil; and Hardoi and Gopamau in Hardoi tahsil. Boots and shoes are made at Sardila, Bilgram and Hardoi—places where a few workmen have come from Lucknow. They use locally tanned Charsa for soles and Cawnpore leather for uppers. While the manufacturers of desi shoes use the light hides for upper and thick or heavy ones for the sole. Coloured sheep skins are used for ornamenting the desi shoes and come from Lucknow and Darbhanga in Behar. Ordinary sheep skin is used for lining the boots and shoes. There are five manufacturers of boots and shoes in Hardoi, four in Bilgram and two in Sandila.

Organization.—Manufacturers of desi shoes are individual workers, working with the help of the inmates of the family. Boots and shoes are made in small shops in the Hardoi Bazaar where two to four workers are engaged on piece wage system getting 12 annas to Re. 1-8 per pair. The owner of the shop very often works himself and trains other men with the help of men obtained from Lucknow.

Marketing.—Desi shoes are sold to byoparis who come round to the villages collecting things for exporting them to Behar and Bombay for the use of upcountry residents of the places.

Profits (desi shoes):—

	Rs.	a.	p.
Cost of leather for one pair of shoes	...	1	4 0
Yarn and other articles (including wax and oil)	...	0	4 0
Total	...	1	8 0

This will be sold for Rs. 2 to Rs. 2-8 and will be prepared in a day, but on the average it takes about 2 days for the man to prepare it because he is very irregular.

Boots and shoes are mostly made to order and the workman earns about Rs. 2 to Rs. 3 per pair according to the quality of goods prepared.

Suggestions.—The number of workers is large in Mallawan, Bilgram and Sandi. These are mostly mochis, but at Bilgram about 25 workmen are Muhammadans. A co-operative society for giving credit for the purchase of material or supplying material on credit will do them good.

7. Miscellaneous.

(a) Basket making.

This is no organized industry of the district. Villagers make baskets of jhankar (arhar plant), jhau and munj for sale. Jhankar baskets are mostly made and jhau baskets are common in Katiari pargana where the river banks have extensive areas under jhau. Munj baskets are not sold commonly, but are prepared by kurmi women and form an important item in their marriage presents.

(b) Smoking tobacco.

Smoking tobacco is in universal demand everywhere, but in the Hardoi district there are no big shops nor is the tobacco of Hardoi famous. There are no shops for the production of eating tobacco and dried leaves are used by the people. The manufacture of smoking tobacco is on a very small scale and it meets somehow the local demand. Shira is imported mostly from Shahjahanpur. Khamira is not used and very few spices are added. Leaves are rather coarsely pounded and shira and sajji are mixed with the powder to make the thing ready for use.

Organization.—The shopkeepers get leaves pounded on wages and do the mixing of shira and sajji themselves. Shira is either imported direct from the mills or obtained in the big market centres like Madhoganj, Beniganj, Sandila, Bhawan and Hardoi.

Profits—

	Rs.	a.	p.
Cost of 1 maund dry leaf ...	...	10	0 0
Cost of 1½ maund of shira ...	...	6	12 0
Sajji and the cost of pounding the leaves, etc.	1	8	0
Total	...	18	4 0

This will give him about 3 maunds of tobacco at 3 annas a seer fetching Rs. 22-8, leaving Rs. 4-4 or 23 per cent. as profit.

Season.—Tobacco has to be prepared all the year round and dry leaf is obtained from dealers who stock it.

Suggestions.—Some of the flour mills should have a disintegrator to pound tobacco and dealers can stock pounded tobacco and sell to the manufacturers.

8. Oil.

(a) Oil crushing in the villages.

Desi bullock driven wooden kolhu are universally in use. Only one man at Madhoganj has a hand press for expressing oil from neem and castor seeds. There are no power oil mills working, but there are three iron kolhus driven by power in the Oudh Ginning and Pressing Factory at Hardoi, and the Ginning Factory at Madhoganj is setting up iron kolhus for an oil mill.

Organization.—The family is the unit for desi kolhus. The telis cannot afford to store oilseeds and have to purchase oilseeds from time to time on cash or credit from the dealers. If they purchase on credit, they are bound to sell oil to the dealers if they want to purchase it.

Profits.—A kolhu can crush about 9 seers of mustard oilseeds (the most popular oilseed crushed by the telis). Of this one-third is oil and two-thirds oil-cake. The sale price of oil covers the price of oilseeds and the cake produced is his profit. He will sell oil cakes for Re. 1-2 to Re. 1-4, which will be his gross daily profit.

Suggestions.—The type of hand press suggested in the Foreword to the Lucknow report—which should be handy and light, adaptable to all kinds of seeds, cheap and easy of repairs without complicated machinery will, if devised, go a long way to improve the industry and will increase the scale of production and decrease the loss in oil that is left in the cake at present. The number of telis at one place is not large enough to warrant a co-operative store for the supply of oilseeds.

(b) Sandal oil making.

Bilgram tahsil being on the border of Kanauj, there were many concerns for distilling oil from sandalwood. Most of

these works have now closed. They used to distil oil for the Itr manufacturers of Kanauj, but as the cost of production has increased, the business has ceased to pay. Only one concern at Madhoganj is still at work.

The dealers of Kanauj used to give the distillers one maund of wood and take back 1 seer 13 chataks of oil. The balance of produce used to cover the expenses and profits. The quality of sandalwood is said to have deteriorated and the balance left after return of one-third oil is not sufficient to meet even the cost of production. The present distiller, Debi Prasad, distils sandal oil on wages, getting Rs. 10 per maund of sandalwood distilled. But even this does not leave him more than 12 annas a maund as his profit. He now works with only 5 degs or copper stills, while he had about fifty a few years ago. The distilling works at Khandaria-Sumerganj, Tendua, Baur, Parauli and three others at Madhoganj have closed down.

Organization.—Deg distillation is in vogue. Wood is used as fuel. Blocks of wood are filed by labourers who charge Rs. 2 per maund. There is one man to supervise the 5 degs.

Profits.—He gets Rs. 10 for distilling one maund of sandalwood.

Expenses—

	Rs.
Wages for filing the wood	2
Fuel	5
Wages for the distiller	2
	—
Total	9
	—

He saves Re. 1 for himself and has to send back the oil produced to Kanauj. The price of sandal oil does not affect the profits of this mere distiller.

Suggestions.—The suggestions made in my Lucknow report for distillation of scents from flowers apply to this as well. Direct fire chars the wood and decomposes oil, so a false bottom or cage is necessary. The delivery tube should pass through a worm condenser.

9. Pottery.

There is nothing distinctive about the pottery works of the Hardoi district. At Bilgram and Sandila there are kumhars who make coloured and glazed (with lac paint) pots for domestic as well as ornamental use. Makhan Kumhar of Bilgram makes lac coloured pots and coloured toys as well. His goods have a regular demand.

10. Textile.

A. COTTON.

(i) *General.*—Hardoi is the most important cotton growing district in the Lucknow division and its markets at Madhoganj and Hardoi attract the produce of the neighbouring districts. The quality of cotton is not good and the short stapled "United Provinces" are most commonly grown.

(ii) *Cotton ginning and pressing.*—There are three ginning and pressing factories in the district—two at Hardoi and one at Madhoganj. The Hardoi factories are fitted with single gins, while the Madhoganj factory has double gins. The factories are near the railway station with sidings.

Organization—Capitalistic arhatias and mill-owners purchase raw cotton and get it ginned in these mills which charge Rs. 10-8 per bale for ginning and pressing. Seed is sold separately. The factories gin their own cotton as well, though to a small extent. Factory labour is seasonal and there is a munshi or accountant who looks after the factory during the dull season.

Marketing.—Most of the ginned and pressed cotton goes to Bombay where it is stored up in the cotton green at Colaba by the merchants or their agents. Since 1918 all cotton transactions in Bombay have been controlled by the Contract Board now substituted by the Central Cotton Committee. The prices are regulated by the Cotton Magnates of England and America who not unoften artificially regulate the prices to their advantage by cornering the supplies. The forecasts give ample food for the speculators who have to pay heavily for slight miscalculations.

Profits.—Prices fluctuated very much during the last two years and caused immense loss to persons who speculated in cotton. Ordinarily the following will give an idea of the

profits of a dealer in a candy of 10 maunds of ginned and pressed cotton :—

	Rs.	a.	p.
Price of 33 maunds of raw cotton	... 366	10	8
Expenses of ginning and pressing	... 11	0	0
Railway freight to Bombay	... 10	0	0
Total expenses :	387	10	8
Sale price of 10 maunds of ginned cotton	... 360	0	0
Sale price of 20 maunds of seed	... 66	10	8
Total	... 426	10	8

Profits.—Rs 426-10-8—387-10-8=Rs. 39.

(iii) *Spinning*.—Cotton spinning by kurmi women in their leisure after harvesting is over is common in the Bilgram tahsil and in Balamanu pargana of Sandila tahsil. Mallawan is the important market for handspun yarn and koris usually use it for weaving coarse cloth.

Roughly speaking, about 250 lbs. of yarn is spun annually and is sold at 10 chataks per rupee.

Atwa Kursat, Bansa, Kursat, Phulai, Telia, Harawal, Tendua, Goswa and Purbhawan are the chief villages where hand spinning is done.

(iv) *Weaving*.—It is the most important industry of the district and at one time very fine muslin was woven at Pihani, Bilgram and Sandila. Muslin is no longer woven and weaving is usually confined to coarse cloth. At Sandila some improvements have been made which will be discussed separately. The weaving centres are at Mallawan-Bhagwantnagar, Pihani, Gausganj, Sandi, Hardoi and Sandila. Mill yarn is mostly used, but for coarse cloth they use handspun yarn also for wefts in some places like Mallawan. The weavers do not use handspun yarn because its supply is not regular, it is not cheaper than mill yarn, and because it does not withstand the brushing at the time of sizing and dressing of the warp.

Organization.—With the exception of one or two very small factories owned by private individuals employing weavers on wages, the weaving is done by individual weavers with the help of other members of their families. For sizing and dressing of the warp help is taken from the neighbours whom

they help in their turn ; and for laying of the warp they engage boys if they have none in the family.

Marketing.—The weavers dispose of their goods in one of the following ways : by taking their goods individually to the markets, by giving them to itinerant dealers for commission sale, or by selling them to the local brokers or dealers. At Mallawan the local dealers act as brokers also for outsation merchants and charge six pies per piece from the merchants and three pies per piece from the weavers. The dealers or brokers do not usually advance money on Dadni (advance) system, but the yarn dealers who are also dealers of cloth often take advantage of the indebtedness of the weavers to them and supply them yarn on condition that the finished product would be brought to them at a fixed rate. The number of such dealers is small and generally a yarn dealer does not bother about the finished products.

Profits.—The average daily income of a weaver is 12 annas.

	Rs. a. p.
Price of 3 lbs. of yarn for a 10 yard piece	... 2 12 0
Sizing	... 0 4 0
	... 3 0 0

This will be ready in 1½ days and will sell for Rs. 4, giving him a profit of Re. 1.

Suggestions.—Please see note on Sandila weaving

Note on Weaving in Sandila by the Divisional Superintendent of Industrial Surtey.

Sandila is the most important weaving centre in my division and efforts have been made here in the right direction towards better organization and improvement of the industry. There is a Government Weaving School at Sandila financed by the Government and the District Board. It has done much under the able guidance of Khan Sahab Kabool Ahmad to popularise fly-shuttle looms.

The success of the co-operative movement in Sandila is due mainly to the energy and devotion of Khan Sahab Kabool Ahmad who is successfully working the Central Bank, the Weavers' Society with affiliated Muhalla Societies and Village Societies and the Sandila Yarn Store, Ltd.

A distinctive feature of Sandila weaying is the organization of small factories with fly-shuttle looms fitted with warp rollers, owned by some of the well-to-do weavers and educated men who are trying to take advantage of the swadeshi movement. Besides garha and doria of the ordinary weavers these factories prepare dhotis, saris, dupattas, shirtings, twill, drill, towels, etc.

There are four men in Sandila who weave very strong and artistic table cloth or bed covers called *musajjar* on the throw-shuttle looms. For coloured checks they still have to use the throw-shuttle looms.

In the factories there is a head weaver, a man for arranging the warp and sizing it, boys for laying out the warp and winding the bobbins, and there are weavers for the looms. The factories owned by weavers do sizing for other factories on wages at Re 1 to Re. 1-8 per warp of 40 to 60 yards. The factories have rollers for warps instead of pegs and thus save much space and time.

Marketing.—The factory owners sell their goods in their premises and have to depend upon their personal canvassing for outstation orders. They do not advertise in the papers, nor have they printed cards.

Dyeing of yarn.—There is need for a good dye house which could dye yarn at a reasonable rate. The Sandila School does silk weaving also but has to get all yarn dyed from the Benares Central Weaving Institute, but the work is not satisfactorily done for mufassil customers. The Sandila dyers are mostly indigo dyers and only two of them, Mohammad Ahmad and his brother Habib Ahmad, can dye yarn which are somewhat fast, but their charges are high. They use German dyes and with the help of chemicals like caustic soda and the process of boiling (crude steaming) make the colours fast.

Suggestions.—Increase in output, standardising of products, finer and more artistic works, co-operative organization of the weavers for the purchase of yarn, sale of their goods and joint ownership of certain machinery are some of the most important steps that could be taken to improve the industry.

The increase in output could be brought about in several ways, e. g., by introducing fly-shuttle looms among the individual weavers of all weaving centres of the district, and this alone will nearly double the production, and by having separate

organization for the preparation of warps by means of warp laying and sizing machines.

Steps towards standardising of products and large scale production of particular designs could be taken by having Central Stores at convenient centres. The stores could supply the weavers with warps of fixed percentage of sizing and insist on a particular texture and design of the cloth they would purchase. The variety of texture and design could be obtained by dividing weavers into groups or centres and allocating different textures and designs to different groups or centres.

The weaving schools should encourage the production of finer material and should pay special attention to artistic work like jamdani and doria weaving.

Small experimental factories with schools should be started at centres other than Sandila to demonstrate the improved methods and appliances, and we should encourage the weavers to adopt them by supplying the necessary appliances at easy rates.

Note on the Sandila Central Weavers' Co-operative Society and the Yarn Stores.

To encourage the handloom industry it was decided to start a Weavers' Co-operative Society with two branches—one cash branch and the other yarn branch. In September, 1909, the credit society was started with a yarn store. As the weavers lived in scattered areas in the town of Sandila, the organizers did not think it desirable to have an unlimited liability society and the Registrar of the Co-operative Societies permitted a limited liability society. It was decided to make the Manager of the Sandila Urban Bank the *ex-officio* Sarpanch of the society which consisted of four weaver members. The value of each share was Rs. 10 to be paid in easy instalments of annas four per month. Thirty-two members joined the society in the beginning. For the yarn store the Local Government granted a loan of Rs. 3,000 which was increased subsequently to Rs. 5,000. The yarn store has been able to pay off this debt. Loans are advanced to members on personal security for all reasonable requirements. The members purchase yarn from the store on cash payment, and if they require yarn on credit, they can borrow from the society at 11 per cent. Other dealers give yarn on credit without the formal and legal securities, and for this reason the weavers

prefer the individual yarn dealer. Some easier arrangement for giving yarn on credit should be made as the weavers are not willing to undergo the trouble of writing a bond in order to obtain a loan. The members and non-members can both make purchases, but bonus is given to members only. This has led to an abuse. Before the war and during the war, the store could give good bonus. This tempted the members who induced several non-members to make their purchases through them promising to share the bonus. Naturally the bonus became less as the purchases of members were increased. Moreover, there were several fluctuations in the price of yarn which lowered profits. The members, however, expected high bonus and distributed the anticipated shares to their non-member clients. This caused a stir and the society was forced to compensate the loss to the members due to their own folly.

The private yarn dealers charge no interest for a week or ten days from regular customers, and the interest thus lost serves the purpose of advertisement as the old client brings his friends. He has several other ways of winning the ignorant weavers' affections, and to counteract this the store should purchase directly from the mills and sell at Cawnpore or Ahmedabad rates, thus lowering the prices and making it difficult for private dealers to compete. The members have not much additional expenses to bear in taking loan except the stamp, but the worry is too much, specially when better terms are available in the market.

The yarn store should have more capital to combat the rivals and to open branches. This store could, in course of time, be developed into the Central Store suggested for the standardising and grading of the finished products.

The Sandila Weavers' Society was reorganized in 1921. There is now the Central Weavers' Society in its place with affiliated Muhalla Societies. These primary societies have been arranged to facilitate the work. It is still a credit society, and its reorganization does not affect the store at all.

B. FIBRES.

Tatpatti or sack cloth weaving.

Kurmis and Kahars of Shahabad and Manjhia and Bakharra in Hardoi tahsil prepare tat-pattis or long strips of sanai or hemp 6 inches, 9 inches or 12 inches broad and 30 feet and

27 feet long which are used for making purdas or curtains, pakhari for covering the carts carrying grain, gonis or bags for pack animals and patas or bags for refining gur into sugar.

Sanai is spun into "sutli" on the vena or hand spinning spindle by men and boys and women open up sanai. When sufficient sutli is spun they lay out the warp on the loom which is a simple arrangement like that used for munj matting weaving in the jails. Instead of a sley, they use the Hatha which is a dagger shaped piece of tamarind wood with which they beat very powerfully the weft sutli to the fall of the cloth. The weft is wrapped on a piece of wood which serves the purpose of shuttle.

They can weave pattis up to 10 or 12 inches wide. They lay out 33 to 30 feet long warps which remains 30 to 27 when ready. These strips are joined together to form the curtains and pakharis, but one is enough for a pair of gonis or a pata.

Pattis for curtains and pakharis are 6 inches to 9 inches wide and 30 feet long. Pattis for gonis are 9 inches to 12 inches wide and 27 feet long.

Organization and marketing.—The members of the family join together for the various processes—sanai opening, spinning and weaving. The kahars and kurmis grow sanai and also purchase from the neighbouring villages. They make to order as well as on their own account and sell to mahajans or dealers in sanai, who send it out to the various places. The work is dull in the rainy season and at harvesting time. During the rains they can work, but the demand is greatest at the harvest time when pakharis and gonis are wanted for carrying grain. The dealers pay Re. 1-8 to Re. 1-12 for a patti in the rainy season which would fetch Rs. 2-4 at the harvest time.

Ordinarily tat-pattis for pakhari sell for Rs. 2 to Rs. 2-4 each, for goni for horse Rs. 3 to Rs. 3-8 each, for goni for buffaloes Rs. 4 to Rs. 4-8 each.

Season.—October to May.

Profits.—For a horse goni :—

	Rs.	a.	p.
Cost of 4 seers of sanai at Rs 16 per maund	...	1	10 0
Sale price of the goni	...	3	0 0
Profit Re. 1-6-0 in 2 days.			

This will be earned by the man, his wife and at least one child.

Production.—On the average a patti is prepared in 2 days. The pakhari patti takes about $1\frac{1}{2}$ days, the horse goni patti about 2 days, and the buffalo goni about $2\frac{1}{2}$ days. This includes the preparation of sutli also. There are 86 weavers with their families and working for about 200 days they produce 8,600 pattis in the year and consume about 860 maunds of sanai. Two and a half seers of sanai are required for ordinary patti, 4 seers for horse goni, and 6 seers for buffalo goni. The workers are all partly agriculturists.

Suggestions.—They cannot weave patti wider than 12 inches and cannot get their sutli properly dyed. Coloured pattis would fetch a higher price. The Central Weaving Institute has been successful in inventing a fly-shuttle loom for weaving pattis more quickly and of any desired width. This loom should be popularised.

The tat-patti weavers have to dispose off their goods at a very low price during the dull season, and co-operative society to advance them money on the security of the pattis would be welcomed by them.

C. WOOL.

Woollen blanket weaving.

Gadariyas weave ordinary coarse blankets for the villagers. At Adampur near Sandi some good blankets are made by five gadariyas. These blankets are mostly made in execution of previous orders. Each blanket is made up of four long strips, each strip one foot wide and $2\frac{1}{2}$ yards long. A weaver can weave one such strip in a day. The loom is a very simple mechanism as described by Mr. Pim in his Monograph on Woollen fabrics. Each blanket take about 4 lbs. of raw wool which is spun on the charkha by the women in the family. The gadariyas take the blankets to the local and neighbouring markets if they have any left after meeting village orders.

There are 480 gadariyas who weave blankets. Their production would be about 4,800 blankets per annum consuming about 2,520 lbs. of wool.

11. Wood work.

Carved and plain doors, bullock carts of various designs, boxes of all sizes and ploughs are made at various places to meet the local demand and to meet the demand of the annual

fairs. At Hardoi there are about ten shops in the Railway bazaar where laherus are commonly made and people of the neighbouring districts even come to make purchases. The works are mostly of shisham and mango wood, while the wheels of the carts are made of babool wood. Wood carvers of Sandi, Mallawan and Bilgram are above the average. Besides these places, the carpenters of the following places are good workmen and can make many good articles. :—Shahabad, Basitnagar, Jaura, Alamnagar, Udhranpur, Kursenda, Itara, Pihani in Shahabad tahsil Mahammadpur, Alampur, Kasraul, Beniganj, Bhainga and Barraghuman in Sandila tahsil; Kaundha and Itaura in Hardoi tahsil.

CHAPTER IV.

INDUSTRIAL POSSIBILITIES.

1. There are some small flour mills at Hardoi and also three ginning mills, but none of them are paying. Combined flour, ginning and oil mills can be paying if started at market centres like Hardoi and Madhoganj.

2. At Shahabad fruit preserving industry may be profitably attempted by some educated and enterprising young men. The owners of the mango nurseries should consult the Government Horticultural experts for better methods as their grafts are showing a tendency towards deterioration.

3. There is good supply of shisham wood in the district and there is need of trained carpenters who could produce good and artistic furniture both for home and foreign markets. It is the opinion of many experts that well made furniture can be exported to European countries.

4. There was a proposal for starting an industrial school in memory of one of the Deputy Commissioners. There is a fund already with the District Board and a school should be started for training in carpentry, pottery, smithy with a view to the manufacture of cheap and good cutlery, the use of small machines for making bootlace, buttons, matches, cardboard boxes, etc.

5. There is scope for further improvement in the weaving industry at Sandila and other places. More co-operative organizations like the Sandila Yarn Store and Co-operative Weaving Factory are needed for joint purchase of material and sale of finished products. At Sandila the co-operative societies of weavers should be induced to purchase some of the labour and time-saving appliances like the warping and sizing machines.

The industries department has decided to demonstrate the use of the Madras Amalsad sizing machine in the Sandila weaving school, and it is hoped that it will give a stimulus to the local weavers.

A sectional warping and sizing machine has been invented in Bengal and is quite cheap and useful for the purpose.

6. The lohars of Bilgram and Pihani should be induced to prepare knives, scissors, etc., just as they are doing in other parts of the country to replace foreign cutlery.

7. Small tanneries on the model suggested by the Calcutta Research Tannery in their handbook on small tanneries can be attempted at several places.

8. The gaddis of Sandila tahsil prepare very good ghee. They should organize themselves for the supply of good and pure ghee at reasonable rates to the big cities and do away with the adulteration and profiteering of the middleman. They can purchase cream and butter making machines and supply fresh and tinned butter as well.

CHAPTER V.

STATISTICS.

1. Building materials.

(a) Brick kilns.

Material used.—Brick earth and fuel.

Imports and exports.—Nil.

Manufactures.—Bricks of various kinds and qualities.

There are both temporary and permanent kilns numbering
20.

Number of men engaged.—250, mostly day labourers.

Wages.—6 annas to 8 annas per day.

Moulders get Re. 1 to Re. 1-8 per 1,000 bricks.

Foreman Rs. 30 to Rs. 40 per month.

Outturn.—3,000,000 bricks annually.

Prices.—Rupees 15 to Rs. 25 per 1,000 including cartage.

(b) Lime Works.

Material used.—Kankar and cinder.

Quantity.—About 300,000 c. ft. of kankar.

Manufactures.—Kankar lime.

There are small factories with stone mills driven by bullocks. Only one factory has steam-engine.

Total number.—9.

Outturn.—300,000 c. ft.

Men engaged.—75.

Wages.—8 annas to 12 annas per day by time.

Prices.—Kankar, Rs. 6-8 to Rs. 7 per 100 c. ft.

Lime, Rs. 30 to Rs. 40 per 100 c. ft.

Chhedda's lime mill.

Engine.—14 H. P. Boiler 60 lb. pressure.

1 Disintegrator.

Number of men.—5.

Outturn.—50,000 c. ft.

2. Chemicals.

(a) *Manufacture of crude saltpetre.*

Materials used.—Nitrous earth and fuel.

Royalty.—Not fixed. Average Rs. 4 to Rs. 5 per village.

Manufactures.—Crude saltpetre mixed with common salt.

Number of men.—300 men for 153 boiling pans.

Wages.—Roughly estimated they come to about Rs. 18 to Rs. 20 per season of 2½ months.

Outturn.—2,052 maunds taking 13½ maunds per pan.

Prices.—Rupees 3 to Rs. 4 per maund according to quality.

(b) *Saltpetre refining.*

Lala Parshadi Lal's Refinery or Shora Kothi.

Filter pots.—8.

Boiling pans.—4.

Boxes for crystallising.—24.

Materials used.—Crude saltpetre of the Ioniyas.

Quantity used.—5,500 maunds.

Outturn.—3,000 maunds.

Exports.—2,500 maunds.

Prices.—Crude saltpetre Rs. 3 to Rs. 4 per maund.

Refined saltpetre Rs. 9 per maund.

Freight to Calcutta.—Re. 1-8 per maund.

Men engaged.—10.

Wages.—10 to 12 annas per day.

3. Food Grains.

*Flour mills.*1. *Chhedda's Flour Mills, Hardoi.*

Engine.—14 H. P.

Boiler.—60 lb. pressure.

Mill.—One, horizontal.

Number of men.—4.

Wages.—Monthly pay Rs. 15, Rs. 25 and Rs. 35.

Prices.—They do grinding for others.

Charges 8 annas to 10 annas per maund according to demand for work.

Outturn.—2,000 maunds per annum.

2. *The Oudh Steam Flour Mills, Hardoi.*

Engine.—14 H. P.

Boiler.—50 lb. pressure.

Mill.—One, horizontal.

Outturn.—3,000 maunds.

Number of men.—4.

Wages.—Monthly pay Rs. 15 to Rs. 40.

Prices.—They do grinding for others at 8 to 10 annas per maund.

3. *Munney Mian's Flour Mills, Hardoi.*

Oil engine.—12 H. P.

Mill.—One, horizontal.

Outturn.—1,500 maunds annually:

Number of men.—3.

Wages.—Rupees 10, Rs. 15 and Rs. 30 per month.

Prices.—Grinding charges from others 8 to 10 annas per maund.

4. *The Nawab Sugar and Flour Mills, Shahabad.*

This is in the course of erection. Three rollers and four centrifugals have been brought from Lucknow and will be worked by the old engine of the sugar mills.

A. **Hardware.**(a) *Manufacture of domestic utensils.*

Raw material.—Old utensils and bars of kaskut (an alloy of zinc and copper) and of gilat (an alloy of zinc and lead).

Quantity.—About 155 maunds.

Imports.—Not known.

Old utensils are obtained locally and bars are brought from Cawnpore. Ready-made articles for sale are also obtained for the markets from Unao, Lucknow, Mirzapur and Moradabad.

Exports.—Nil.

Manufactures.—Lotas and bailois. It is a cottage industry.

Number of shops.—10.

Men engaged.—35.

Wages.—Lathemen 6 annas per day.

Wages paid by factory owners to labourers if engaged—

Turner, Re. 1-8 per day.

Fileman, Re. 1-4 per day.

Moulder, Rs. 2 per day.

Wages paid by dealers to factory owners.—Rupees 25 to Rs. 30 per maund prepared in one to two days. This includes besides wages to various workmen, loss in material, price of moulds, fuel, etc.

Outturn.—142 maunds annually.

Prices.—Old materials 10 annas to 12 annas per seer
Ready-made things Re. 1-6 to Re. 1-8 per seer.

(b) *Iron Works.*

Material used.—Iron.

Exports.—2,000 locks to Shahjahanpur, Sitapur, Unao, etc.

Manufactures.—Locks, utensils (occasionally) and implements.

Lock-making is a cottage industry.

Men engaged.—8.

Outturn.—2,500 locks annually.

Prices.—8 annas, Re. 1, Rs. 2 and Rs. 3 per lock.

Common variety 8 annas each.

(c) *Manufacture of pan boxes of brass.*

Materials used.—Brass sheets.

Exports.—About 300 boxes annually.

Manufactures.—Pan or betel boxes shaped like heart. It is a cottage industry.

Men engaged.—5 (lock makers of Bilgram).

Outturn.—500 boxes annually.

Prices.—8 to 12 annas and Re. 1-4 each.

5. **Leather.**

(a) *Tanning.*

Material used.—9,000 hides, lime and babul bark.

Imports of lime.—Not known. Others nil.

Manufactures.—Tanned hides.

It is a cottage industry subsidiary to agriculture.

Men engaged.—800 all partially.

Outturn.—About 9,000 hides annually.

Prices.—

Tanned.—Rs. 10 to Rs. 12, buffalo hides.

Rs. 8 to Rs. 10, cow hides.

Rs. 4 to Rs. 5, calf.

Raw.—Rs. 4 to Rs. 6-8 buffalo.

Rs. 2 to Rs. 3 cow.

N.B.—These chamars get hides of dead animals free of cost also.

(b) *Manufacture of shoes.*

Material used.—

Ordinary tanned upper leather—3,000 tanned hides.

Sole leather—2,500 tanned hides.

Superior tanned coloured leather for uppers—1,200 sq. feet.

Import.—

Superior tanned—1,200 sq. feet.

Desi coloured tanned—500 hides or skins.

Places of import.—From Cawnpore and Lucknow.

Exports.—About 5,000 pairs annually.

Places of consignment.—To Bombay and Behar.

Manufactures.—Desi Munda shoes and boots and shoes.

It is a cottage industry.

Men engaged.—300.

Wages.—Their profits. 12 annas to Re. 1-8 per pair when engaged by boot and shoe-makers.

Outturn.—45,000 pairs annually.

Prices.—

Hides for sole, Rs. 12 to Rs. 15 each.

Hides for upper, Rs. 10 to Rs. 12 each.

Cawnpore tanned leather, Rs. 7 to Rs. 8 per piece.

Shoes.—Munda, Re. 1-4 to Rs. 2-8 pair.

Shoes, Rs. 4 to Rs. 6 each pair.

Boots, Rs. 7 to Rs. 8 per pair.

6. *Miscellaneous.*

Tobacco for smoking.

Material used.—Tobacco leaf and molasses or shira and saji.

Leaf.—6,000 maunds, shira 10,000 maunds, saji 600 maunds.

Imports.—Shira 10,000 maunds from Shahjahanpur and Unao.

Manufactures.—Smoking tobacco.

It is a cottage industry. There are 45 shops.

Men engaged.—100.

Pounding of leaves Re. 1 to Re. 1-4 per maund.

Outturn.—17,600 maunds.

Prices.—

Leaf, Rs. 10 to Rs. 12 per maund.

Tobacco, 3 to 5 annas a seer.

7. Oil.

Crushing of oilseeds in villages by desi wooden kolhus.—

Material used.—Oilseeds of all kinds specially rape and mustard.

Quantity.—113,760 maunds.

Manufacture.—Oil and oil-cakes.

It is a cottage industry subsidiary to agriculture.

Number of kolhus.—2,528.

Wages.—Members of the family work and mutually enjoy the profits.

Outturn.—Oil 37,920 maunds, taking 3 seers per day per kolhu working for 200 days.

Oil-cake 75,840 maunds.

Prices.—Fluctuate daily.

8. Textiles.

(a) Cotton spinning on the charkha.

Material used.—Cotton.

Quantity.—250 lbs. of cleaned and ginned cotton.

Manufactures.—Yarn of 8s and 10s.

It is a cottage industry.

Kurmi women mostly spin in their leisure hours. Their number is not recorded.

Wages.—Their sale-proceeds.

Outturn.—250 lbs. annually.

Prices.—10 chataks per rupee (wet on the kukri).

(b) Cotton ginning and pressing.

(i) Onkar ginning and pressing mills, Hardoi.

Engines.—2.

Boiler.—One of 140 lbs. pressure.

Single gins.—40.

Combined press.—One.

Seasonal employees paid monthly—

- 1 Engineer at Rs. 125 per month.
- 1 Engine driver (permanent) at Rs. 35 per month.
- 1 Press driver at Rs. 30 per month.
- 1 Fireman at Rs. 35 per month.
- 4 Fitters at Rs. 60 each per month.
- 6 Oilmen at Rs. 15 each per month.
- 1 Carpenter at Rs. 40 per month.
- 1 Blacksmith at Rs. 45 per month.

Labourers for the mill.—70 at 5 annas to 8 annas per day.

Labourers for the press.—30 at 8 annas per day.

Outturn.—1,300 bales of 400 lbs. each. Of these 133 bales belong to the mill itself and the rest came for commission ginning.

Raw cotton used.—19,500 maunds.

Prices —

Raw cotton Rs. 10 to Rs. 11 per maund.

Ginned cotton Rs. 325 to Rs. 370 per candy of 10 maunds.

Ginning and pressing charges Rs. 16-8 per bale of 400 lbs.

(ii) Baijnath Balmakund Ginning and Pressing Factory, Madhoganj—

Capital.—Rupees 2,00,000.

Floating capital.—Rupees 40,000.

Boiler.—58 H. P. Pressure 100 lbs.

Engines.—2, one for the gins and the other for the press.

Double gins.—40.

Opener.—One.

Combined press.—One.

Sharpener.—One.

Lathe.—One.

Hole making machine.—One.

Dynamo.—One.

Number of men.—35 paid monthly for the season.

Wages.—Rupees 15 to Rs. 100 per month.

Daily labourers.—Men 100, women 43, at 6 annas to 8 annas per day.

Outturn.—9,000 maunds of pressed and ginned cotton.

Raw cotton used.—30,000 maunds.

Cotton seed obtained.—18,000 maunds.

Prices.—

Raw cotton, Rs. 10 to Rs. 11 per maund.

Ginned and pressed cotton, Rs. 325 to Rs. 370 per candy of 10 maunds.

Ginning and pressing charges, Rs. 16-8 per bale of 400 lbs.

(iii) *The Oudh Ginning and Pressing Factory, Ltd., Hardoi—*

The concern was under liquidation when I enquired about it and could not get satisfactory information.

Engines.—2, one for the gins and the other for the press, pump and dynamo.

Boiler.—One of 160 lbs. pressure.

Single gins.—40.

Oil kolhus.—3.

Lime mill.—One.

Flour mills.—Three.

Dynamo.—One.

Press.—Two, one for half and other for full pressing and baling.

Number of men.—25 paid monthly. Daily labours 40.

Outturn.—230 bales of 400 lbs. each.

Raw cotton used.—3,450 maunds.

Prices.—

Raw cotton, Rs. 10 to Rs. 11 per maund.

Ginned and pressed cotton, Rs. 325 to Rs. 370 per candy of 10 maunds.

Ginning and pressing charges, Rs. 16-8 per bale of 400 lbs.

*(c) Cotton weaving.**Material used.—*

Yarn.—Counts 20, 16½, 22½, 13½.

Quantity.—920, 625 lbs.

Flour, oil, dyes.

Imports.—Yarn 920,625 lbs. from Cawnpore, Ahmedabad and Lucknow.

Exports.—Roughly about 150,000 yards of cloth annually.

Manufactures.—Garha, dhotis, tapti, doria, striped shirtings, twill, drill, towels, table-cloth, musajjar, etc.

It is a cottage industry.

Number of men.—About 5,000 men and helpers.

Number of looms.—2,946.

Wages.—For warp laying, 5 annas a day.

For sizing, Re. 1 to Re. 1-8 per warp of 40 to 60 yards.

For weaving, 5 pice to 7 pice per yard ordinary, 2 annas to 3 annas per yard good.

Usually their profits are the wages.

Outturn.—3,682,500 yards of cloth at 5 yards per loom per day for 250 days.

Prices.—*Fluctuates daily.*

Average of yarn, Rs. 11 for 13s, Rs. 12 for 16s and Rs. 13-8 for 22s. Cloth, Rs. 3, Rs. 4 to Rs. 6 per piece of 9 to 10 yards. Thirtings, etc., 4 to 10 annas per yard.

(i) *Mr. A. Arabi's Weaving Factory, Sandila*—

Number of shuttle looms.—6.

Number of men.—

1 Foreman at Rs. 22 per month.

1 Warping and sizing man at Rs. 16 per month.

3 Boys for warp and bobbin at Rs. 5 per month.

6 Weavers at 5 to 7 pice per yard ordinary cloth and 2 to 3 annas per yard good work.

Outturn.—12,000 yards.

Prices.—4 to 10 annas per yard.

(ii) *Iftikar Mohammad's Factory, Sandila*—

He is a weaver with a big family and does not engage a foreman or warping man.

Number of fly-shuttle looms.—11.

Number of weavers.—11. Wages of outsiders the same as in Mr. Arabi's factory.)

Boys.—3.

Outturn.—22,000 yards.

Prices.—The same as above.

(iii) *Niamat Ullah's Factory, Sandila*—

Number of shuttle looms.—5.

Weavers.—5.

Outturn.—10,000 yards.

Other items similar to above.

(iv) *Sri Krishna Factory of Babu Kanhaiya Lal, Painter, Sandila—*

Number of looms.—5.

Weavers.—3. Warping and sizing done at Mr. Niamat Ullah's on wages at Re. 1 to Re. 1-8 per warp of 40 to 60 yards.

Outturn.—6,000 yards.

(v) *Co-operative Weaving Factory, Sandila—*

This is a branch of the Central Weavers' Co-operative Society, Sandila.

Number of looms.—7. Eight more to be put up soon.

Number of weavers.—7.

Supervisor and Foreman.—One.

Sizing done on piece wages at 12 annas to Re. 1 per warp of 40 to 60 yards.

Warping boys.—3.

Bobbin boys.—5.

Outturn.—14,000 yards.

They produce towels and shirtings mostly. 10 annas, 12 annas and Re. 1 per yard.

(d) *Tat-patti or hempen goods.*

Material used.—Sanai.

Quantity.—860 maunds.

Imports.—Nil.

Exports.—About 3,000 pattis.

Manufactures.—Tat-patti 6" × 33' for pakharis, curtains, etc.

Goni for bullocks and buffaloes 9" to 12" × 27'. These are strips of pattis sewn like bags. One for a pair.

It is a cottage industry.

Number of men.—86 with helpers.

Wages.—Their profits.

Outturn.—8,600 pattis taking one average patti in 3 days working for 200 days.

Prices.—Sanai Rs. 13 per maund for inferior pattis.

Rupees 15 to Rs. 17 per maund for gonis.

Tat-pattis Re. 1-8 to Rs. 2-4 each.

Patti for goni of horse Rs. 2-12 to Rs. 3-8 each according to demand.

Patti for goni for buffaloes, Rs. 4 to Rs. 4-8 each according to demand.

Pakhari of 7 to 8 ordinary pattis, Rs. 14 to Rs. 17 each according to demand.

(e) *Blanket weaving.*

Material used.—Wool 23,520 lbs.

Manufactures.—Woollen blankets, small and light or heavy.

It is a cottage industry subsidiary to agriculture.

Number of men.—488, all agriculturists.

Wages.—Their profits.

Outturn.—4,880 blankets.

Prices.—Rupees 3 to Rs. 4, small size.

Rupees 6 to Rs. 8, heavy ones.

CHAPTER VI.

DIRECTORY.

1. List of Banks.

The Hardoi District Co-operative Bank, Ltd., Hardoi.
The Central Co-operative Bank, Ltd., Sandila.

2. List of Technical Schools.

The Government Weaving School, Sandila.

3. List of Factories.

The Oudh Ginning Factory and Flour Mills, Ltd., Hardoi.
The Onkar Ginning and Pressing Factory, Hardoi.
Baij Nath Bal Mukund Ginning and Pressing Factory,
Madhoganj.
The Nawab Sugar and Flour Mills, Shahabad.
The Oudh Flour Mills, Hardoi.
Chhedda's Flour and Lime Factory, Hardoi.
Munney Mian's Flour Mills, Hardoi.

4. List of Brick-kilns.

The Shahabad Brick-kiln, Shahabad.
The Pandit Brick and Lime Works, Mallawan.
Brick-kiln at Madhoganj.
The Brick-kilns at Sandila.
Mian Brick Works, Bilgram.
Chhedda's Brick-kilns, Hardoi.
Raghu Nath Kumhar's Brick-kiln, Hardoi.
Puttu Lal's Brick-kiln, Hardoi.
Govind Prashad and Puran Lal's Brick-kiln, Hardoi.
Mirza Niaz Beg's Kiln, Hardoi.
Prayag's Kiln, Hardoi.
Dulli's Kiln, Hardoi.

5. List of lime factories.

The Pandit Lime Work, Mallawan.
Chhedda's Lime Factory, Hardoi.
Raghu Nath Kumhar's Lime Work, Hardoi.

Puttu Lal's Lime Works, Hardoi.
 Gobind Prasad and Puran Lal's Lime Factory, Hardoi.
 A Factory at Shahabad (working when orders are in hand)
 " " Sadnila (ditto)
 " " Bilgram (ditto)
 " " Madhoganj (ditto)

6. List of Saltpetre refineries.

Lala Parshadi Lal's Shora Kothi or Saltpetre Refinery,
 Hardoi.

7. List of Flour Mills.

The Nawab Sugar and Flour Mills, Shahabad.
 Munney Mian's Flour Mills, Hardoi.
 The Oudh Flour Mills, Hardoi.
 Chhedda's Flour Mills, Hardoi.

8. Iron Lock makers of Bilgram.

There are ten lock makers. Prayag, Ishwari, Baldeo and Ram Dayal are the chief workmen. The same men make pan boxes of brass.

9. Sandal Oil distillers.

Debi Prasad, Madhoganj.
 Works at Khandari, Sumerganj, Tendua, Baur, Parauli and three others at Madhoganj, all now idle.

10. List of Weaving centres.

Mallawan-Bhagwantnagar, Bilgram, Sandi in Bilgram tahsil.

Sandila Ghausganj Pihani in Shahabad tahsil.

11. List of yarn dealers.

The Co-operative Yarn Store, Sandila.
 Branch of the Co-operative Yarn Store at Bharawan.
 Chheddi Bakkal, Bhagwantnagar.
 Chunna Lal, " "
 Ram Bhajan, " "
 Sadulla, Kajipir-Bhagwantnagar.
 Ghulam Nabi Kajipir " "
 Phiddan " "
 Madaru " "
 Yakub in Bilgram.
 Lallu " "

Ilahi Bux in Bilgram.

Ali Bux ,,

Ida ,,

Lallu in Sandi.

Bhola ,,

Baiju ,,

Pandit Baldeo in Sandi.

Mir Tamoli ,,

12. List of Weaving Factories at Sandila.

Mr. A. Arabi's Factory.

Mr. Iftikar Mohammad's Factory.

Mr. Niamat Ullah's Factory.

Sri Krishna Factory of Babu Kanhaiya Lal, Painter.

The Co-operative Weaving Factory of the Sandila Central Weavers' Co-operative Society, Limited.

13. Tat-patti making.

Dealers in tat-patti and Sanai.

Debi Charan, Shahabad.

Lalmar ,,

Shiva Deen, ,,

Centres of tat-patti making.

Shahabad.

Manjhia in Hardoi tahsil.

Bakharia ,, ,,

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