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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Jalaun District



• *By*

GANGA NARAIN BHARGAVA, B.A.



. ALLAHABAD :

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FOREWORD.

THE only industry that existed in Jalaun for some time was dyeing of *samrudī* cloth in Saiyadnager and that of *chunris* in Kotra—two villages of Orai tahsil. The industry has declined in both the places and hardly two families now dye *samrudī* in Saiyadnagar and four families survive in Kotra to dye *chunris*. The introduction of synthetic dyes, which can be easily manipulated, has led every family to dye its own cloth, and a change in the tastes of people in favour of the lighter and multifarious shades in which mill-dyed cloth is obtainable has ousted the *chunri* from the exalted position it held in the Indian fashions formerly. *Chunris* are now used in marriages only. There is little hope of reviving the industry.

The dyeing of cheap *kharrua* cloth like that of Jhansi and *amaua* like that dyed in the Gwalior State has been substituted for the dyeing of *samrudī* and *chunri*.

Oilseeds.—But the district has an extensive trade in agricultural products. Amongst those from which industries can be built up the first place should be given to oilseeds. In normal years *sesamum* and rape-seeds are produced in about 5,000 acres, and linseed in 32,500 acres. The district thus produces about 1½ lakhs maunds of these oilseeds. To this should be added another half a lakh maunds of cotton seed. Linseed is almost all exported, so is the cotton seed. Both these eventually find a way abroad. About four-fifths of *makua* is also exported from the district, but a major portion of it is crushed in Cawnpore. It is desirable to make efforts to crush linseed and *makua* in the district. The principal purchasers of linseed are the United Kingdom, France and the Netherlands. Germany and Italy also used to export large quantities in pre-war days. France, Germany, Italy and the Netherlands have all raised a tariff wall against the import of oil. There is no hope of any of these foreign countries

buying the Indian oil. Before the crushing of linseed advances it will be necessary to begin the manufacture of paints and varnishes in the country. A market will also have to be found for the cake. *Mahua* oil, on the other hand, can easily be consumed in the manufacture of soaps.

Rape and sesamum are crushed in the district, but their supply is so small that it cannot suffice for the large number of oil-crushers in the district. The natural consequence is that *telis* have taken to agriculture and the district imports oil from outside. An oil mill will certainly benefit the district, but if there were a demand for linseed oil and linseed cake, a co-operative society for the purchase of the seed and the sale of oil and oil-cake will solve the problem much more quickly than the oil mill, as it will find employment for the *telis* as well as help the district to use its raw material.

Hides and skins.—About 75,000 maunds of hides and 1,000 maunds of skins are available annually from the slaughter-houses. In addition to these, account should be taken of the hides and skins of dead animals. These would be about 1,200 maunds of hides and 200 maunds of skins. Most of this raw material is exported at present and a small tannery is desirable to arrest this export. Kalpi is suggested as the best place for one, as it is on the banks of the Jamuna and has a good drainage. *Babul* bark is also available there.

Cotton.—Another raw material which is all exported at present is cotton. The district is not a great consumer of yarn. But large quantities of yarn are imported in the division and a mill in Bundelkhand can very well utilise its raw product and supply its demand of yarn.

The following gentlemen have helped in the survey work and the thanks of the department are due to them :--

1. Rai Radha Raman Bahadur, Collector, Orai.
2. T. H. A. Way, Esq., I.C.S., Commissioner, Jhansi.
3. T. W. Morris, Esq., L.C.S., Commissioner, Jhansi.
4. Rai Gopal Das Sharma Sahib, M.L.C.
5. Lala Chimman Lal, officiating Collector, Jalaun.

I am also indebted to Mr. S. T. Gadre, Industrial Chemist to Government, and to Mr. B. K. Ghare of the Cawnpore Agricultural College, for valuable assistance rendered in checking the report.

CHAMPA RAM MISRA.

The 19th December, 1922.

CHAPTER I.

INTRODUCTION.

1.—General features.

Boundaries—

North.—Etawah and Cawnpore districts.

East.—Samthar State, Jhansi and Hamirpur districts.

South.—Cawnpore district and Baoni State.

West.—Gwalior State.

The highlands bordering on the Khadir valley of the Betwa break up into a network of ravines stretching for some miles inland from the streams, while the central tract forming the lowlands forms a wide flat basin, drained by minor streams.

2.—Population.

The census of 1921 recorded 405,439 persons.

3.—Roads.

Roads on main lines of traffic are metalled, but the north of the district is cut up by numerous *nalas* offering considerable obstacles to traffic, specially during rains.

The following is a list of the roads :—

LIST OF THE ROADS, METALLED AND UNMETALLED.

(i) *Provincial metalled roads.*

Name of road.	Length in miles.
1. Cawnpore-Jhansi-Saugor road	44
2. Usargaon Railway Feeder road	
3. Ata ditto	
4. Bhawa ditto	
5. Perona ditto	

(ii) First class metalled roads.

Name of road.	Length in miles.
1. Jalaun-Madhogarh road	16
2. Jalaun Dabiapur road	21
3. Orai-Jalaun road	13
4. Jalaun Link road	1
5. Ait-Kunch road	8
6. Orai ditto	18
7. Station road	6
(a) Jail road	1
(b) Railway Feeder, no. 1 road	1
(c) Ditto no. 2 road	1
(d) Orai Circular road	2
(e) Orai-Hamirpur road	1
(f) Police line road	1

(iii) Second class roads, unmetalled, but bridged and drained throughout.

	Length in miles.
1. Jalaun to Gwalior	7
2. Orai to Hamirpur	25
3. Kalpi to do.	10
4. Ait to Kotra	7
5. Ata to Amisa	7

Beside these, there are a few third, fourth, fifth and sixth class roads. Their total length is 480 miles. Some of these are mere cart tracks.

4.—Railways.

	Stations.
Great Indian Peninsula Railway, 45 miles	Punch, Pirora, Ait, Bhora, Orai, Ata, Usargaon and Kalpi.
Ait branch, 9 miles	Ait and Kunch.

5 — List of ferries.

River.	Ferry.	Season when navigable for export trade.
Jumna ...	1. Romai.	
	2. Mahtauli.	
	3. Salus Bijalpur ...	Navigable during rainy season, but no export trade is carried on.
	4. Shergarh.	
	5. Johikha.	
	6. Keontia.	
	7. Nuwawali.	
	8. Kanjusa.	
	9. Tari Bulda.	
	10. Jita Mau.	
	11. Khargoi.	
	12. Dapelkhand.	
	13. Hirapur.	
	14. Semra Shekhupur.	
	15. Pal.	
	16. Raipur.	
	17. Mainupur.	
	18. Sareni.	
	19. Gulauli.	
	20. Narhan.	
	21. Kartila.	
	22. Pontoon bridge.	
Betwa ...	1. Kotra.	
	2. Saujadnagar.	
	3. Mohana.	
Pahuj ...	1. Salaiya.	
	2. Beswari.	

6.—List of markets.

Tahsil.	Town or village.	Market days.
Orai ...	1. Orai	... Sunday and Wednesday.
	2. Ait	... Thursday.
	3. Jaisari Kalan	... Ditto.
	4. Saiyadnagar	... Wednesday.

Tahsil.	Town or village.	Market days.
Orai —(concl'd.)	5. Kotra	... Tuesday.
	6. Dhurat	... Ditto.
	7. Kusniulia	... Saturday.
Kalpi	1. Jaraura	... Tuesday.
	2. Ata	... Monday and Friday.
	3. Itaura	... Daily.
	4. Chhounk	... Tuesday.
	5. Taruangunj	... Sunday and Thursday.
Kunch	1. Amkhera	... Tuesday and Thursday.
	2. Iutaun	... Sunday and Wednesday.
	3. Waoli	... Monday and Friday.
	4. Kathaund	... Sunday and Thursday.
	5. Hadrukh	... Monday and Friday.
	6. Jalaun	... Sunday and Thursday.
	7. Madhogarh	... Tuesday and Saturday.
	8. Jagamaupur	... Sunday and Tuesday.
	9. Rampura	... Monday and Friday.
	10. Kunch	... Friday.
	11. Rendhar	... Thursday.
	12. Pindari	... Sunday.
	13. Basob	... Thursday.
	14. Bhend	... Thursday and Saturday.

7.—List of Fairs.

Tahsil.	Locality.	Name of Fair.	Date.
Orai	1. Orai	... Moharram	... No fixed date.
	2. Do.	... Ramlila	... <i>Kuar sudi</i> 1st to 15th.
	3. Do.	... Jawara	... <i>Chait</i> and <i>Kuar sudi</i> 9th.
	4. Laharia	.. Hanumanjee	... Last Tuesday of <i>Asarh</i> .
	5. Kotra	... Moharram	... No fixed date.
	6. Do.	... Jawara	... <i>Chair</i> and <i>Kuar sudi</i> 9th.

Tahsil.	Locality.	Name of Fair.	Date.
Kalpi ...	1. Itaura ...	Gurt Rupan Baba.	<i>Katik sudi</i> 1st to 15th.
	2. Ata ...	Sheoratri ...	<i>Phagun badi</i> 13th.
	3. Pandi ...	Ditto ...	Ditto.
	4. Piprayan...	Siddh Baba ...	<i>Katik sudi</i> 1st.
	5. Bardauli..	Satguru Baba	Every Monday of <i>Asarh</i> .
	6. Jora Khera	Jageswar Baba	<i>Aghan sudi</i> 15th.
	7. Gulauli ...	Suraj Jatra Talab.	Ditto.
	8. Kalpi ...	Sandal Mela	<i>Bhadon sudi</i> 15th. Sawan.
	9. Kalpi ...	Pachhpera ...	<i>Chait and Kuar sudi</i> 9th.
	10. Babai ..	Ganeshjee ...	<i>Magh badi</i> 4th.
	11. Sheikhpur	Madan Sahib...	<i>Magh badi</i> 5th.
Jalaun ...	1. Sarawan ...	Sheoratri ...	<i>Phagun sudi</i> 13th.
	2. Niraoli } 3. Rampura }	Barahiyan ka Mela.	<i>Aghan sudi</i> 13th.
	4. Kanjausa } 5. Jagmanpur. }	Pachnada of Baba makunt man.	<i>Kariki sudi</i> 15th.
	6. Bijwapur...	1. Naudurga ... 2. Barahaiyon ka Mela.	<i>Chait sudi</i> 9th. <i>Aghan sudi</i> 14th.
	7. Jalaun ...	Ditto ...	Ditto.
	8. Nichaori ..	Sheoratri ...	<i>Phagun badi</i> 13th
	Kunch ...	1. Bosaoli ...	Barhai ...	Aghan sudi 14th.
2. Bhend ..		Ganeshjee ...	<i>Magh badi</i> 14th.
3. Jhala ...		Sheoratri ...	<i>Phagun badi</i> 14th.
4. Chatsari ...		Sitla mata ...	<i>Baisakh badi</i> 9th.
5. Darawati		Sheoratri ...	<i>Phagun badi</i> 14th.
6. Beragarh on the boundary of Shahpur.		Sardah division	<i>Chait sudi</i> 9th.

Tahsil.	Locality.	Name of Fair.	Date.
Kunch— (concl'd.).	7. Kunch	... Akhti	... <i>Baisakh sudi</i> 3rd.
	8. Do.	.. Sawan	... <i>Bhadon badi</i> 1st.
	9. Do.	... Jalbehar Ganesh- jee.	<i>Bhadun badi</i> 10th
	10. Do.	... Jalbehar Thakur- jee.	<i>Bahdun badi</i> 12th.
	11. Do.	... Ram Lila	... <i>Kuar sudi</i> 10th.
	12. Gopalpur	Makar Shankrant	In the month of <i>Pusa</i> and <i>Magh</i> when it occurs.
	13. Kudari	.. Nau Durga	... <i>Chait sudi</i> 9th.
	14. Kunch	... Moharram	... No fixed date.
	15. Do.	... Chilum	... <i>Safa sudi</i> .
	16. Do.	... Jwara	... <i>Kuar</i> and <i>Chait</i> <i>sudi</i> 9th.

CHAPTER II.

Description of, and suggestions for, the improvement of various industries of the district.

1.—Chemicals.

Saltpetre.—Eighty families of Luniyas are engaged in the manufacture of crude saltpetre in the following villages of Orai and Jalaun tahsils:—

Orai tahsil.—Timron, Goran, Amdhia and Binaura.

Jalaun tahsil.—Aurgaon, Syalis, Sarowan and Toisar.

Nitrous earth is scraped from the ruins of the old buildings and collected into heaps. It is then removed to a central place, and when sufficient earth is obtained, saltpetre is extracted by the following methods:—Earthen pots full of nitrous earth are put on mud stands of sufficient height to allow other *gharas* being put underneath the first ones. The upper vessels have small holes in the bottom. Water is poured in them and trickles down through the nitrous earth to the *gharas* placed underneath. This water, which is impregnated with saltpetre, is boiled in an iron pan. Scum is removed as it comes to the top. When a certain consistency is attained, the liquid is poured in another pan where crystals of saltpetre are formed.

Another process followed in some of the villages is as follows:—The Luniyas have four or five small *pakka* tanks connected with one another. They fill nitrous soil in a tank to the depth of about an inch in which water is slowly poured some two inches deep, and this is allowed to stand a day or two. After two days a plug from the water is withdrawn and the liquid is allowed to run off into another small tank where it crystallizes as water is evaporated by the sun's rays.

About 500 maunds of saltpetre are thus manufactured. About 100 maunds of saltpetre are used locally for making fireworks. The rest is exported to Auriya, Cawnpore and Jhansi. Price is Rs. 6 to Rs. 8 a maund.

Saltpetre is manufactured for 4 months in a year and gives a Luniya family an income of about Rs. 50 annually.

Reh.—The district has got 223 acres under *reh* in the following villages :—

Orai tahsil.—Dhurat, Lidhera, Numbai, Takaria and Sudhauri.

Kunch tahsil.—Rundoli, Dawar, Maheshpur and Mau.

Jalaun tahsil.—Aurgaon.

At present it is only used by dhobies for cleaning dirty clothes. It is estimated that about 200 maunds of *reh* are thus used annually. No attempt (so far) has been made to put it to any other use.

Kankar.—The following are the villages where kankar mines are worked and lime is manufactured :—

Orai tahsil.—Dhurat and Orai.

Kunch tahsil.—Garauna, Nanpara, Nawli, Babraund, Chiroli, Thurat, Paricha, Rukhun, Mardai, Majara, Byaipur Parona, Shahpura, Salya Buzurg, Kukroli, Unchagaon, Singh Pura and Maheshpura.

Jalaun tahsil.—Jalaun, Jagrajpur, Dharanna, Coti and Dolutpur.

Kalpi tahsil.—Kalpi.

Kankar of poor quality is found in abundance in the ravines of the Jumna and the Betwa rivers and is collected for road metalling purposes.

Kankar of good quality found in the villages noted above is mixed with *bajri* and burnt with cow-dung for making lime. Lime made by this process sells at Rs. 12 to Rs. 14 per 100 maunds. Lime of good quality is prepared by burning kankar with wood, and such lime sells at Rs. 20 to Rs. 22 per 100 maunds.

Lime making is carried on by Kumhars (pot-makers).

It is estimated that 25,000 maunds of lime are prepared in the district for local consumption.

No exports nor imports.

2.— Food grains.

(i) Statement showing area in acres under the principal food grains (rabi crops) for 5 years in the district.

Crops.	1917-18.		1918-19.		1919-20.		1920-21.		1921-22.	
	Irrigated.	Dry.	Irrigated.	Dry.	Irrigated.	Dry.	Irrigated.	Dry.	Irrigated.	Dry.
Wheat ...	1,024	1,052	1,168	395	1,252	956	1,652	578	1,183	702
Wheat with gram.	55,812	254,222	41,813	25,366	55,279	156,614	54,856	98,883	49,484	173,194
Wheat with barley.	1,733	5,785	1,699	329	1,970	3,165	803	555	954	1,752
Jau ...	83	445	1,096	201	550	491	449	87	263	103
Barley with gram.	10,611	32,663	7,008	3,253	11,020	15,020	28,130	4,184	5,706	27,680
Gram ...	1,134	56,010	3,954	58,780	6,057	70,447	68,239	115,961	3,869	76,504
Peas ...	303	116	139	86	499	62	264	74	164	73

JALAWN DISTRICT.

(ii) Statement showing area in acres under the principal food grain crops.

Crops.	1917-18.		1918-19.		1919-20.		1920-21.		1921-22.	
	Irrigated.	Dry.	Irrigated.	Dry.	Irrigated.	Dry.	Irrigated.	Dry.	Irrigated.	Dry.
Juar ...	...	3,647	113	2,927	...	7,244	380	11,844	...	10,552
Bajra ...	...	6,462	107	9,984	...	8,193	...	8,780	...	13,173
Juar-arhar	23	41,253	8,304	31,631	28	48,137	838	51,680	4	71,612
Bajra-arhar	...	54,752	2,220	102,689	5	62,838	77	65,830	1	78,929
Dhan-aghani	4	16	2	1	2	52	8	24	2	43
Dhan-kuanri	199	318	151	81	62	210	88	562	24	242
Macca ...	2	201	4	7	...	156	...	133	...	177
Arhar ...	...	11	...	14	...	13	...	10	1	11
Urd-mung...	...	105	...	18	...	80	...	10	1	92
Moth ...	...	59	...	50	...	49	...	42	...	45
Kodon ...	...	480	1	520	1	450	1	218	...	234
Sawan ...	...	1,071	...	79	2	7,802	2	3,075	...	7,044

(iii) Statement showing the outturn in maunds per acre of the various crops according to the experimental weighings carried out on the spot by an officer deputed every year for this purpose.

		Irrigated.	Dry.	
1.	Juar ...	5	4	
2.	Bajra ...	9	7	
3.	Juar-arhar ...	5	4	Proportion of arhar 25 per cent.
4.	Bajra ...	9	6	Ditto.
5.	Dhan-aghani ...	5	4	
6.	Dhan-konwari ...	5	4	
7.	Maccu ...	7	6	
8.	Arhar ...	6	4	
9.	Urd and mung ...	5	4	
10.	Kodon ...	6	4	
11.	Sawan ...	6	4	
12.	Moth ...	4	3	
13.	Wheat ...	8	6	
14.	Wheat with gram ...	8	5	
15.	Wheat with barley ...	12	10	
16.	Jao ...	12	10	
17.	Barley with gram ...	12	10	
18.	Gram ...	7	5	
19.	Peas ...	6	5	

3.—Leather.

(i) Tanning.

Cattle census of 1920 returned the following:—

Cows	...	...	39,134
Bullocks	...	...	71,095
Bulls	...	...	116
Buffaloes	...	...	28,666
Sheep	...	...	22,647
Goats	...	...	48,067
Cow calves	...	...	46,855
Horses	...	...	2,107
Mares	...	...	2,581
Buffalo calves	...	...	22,343
Horse calves	...	...	1,018

Forty-nine thousand and six hundred hides and 11,584 skins are available annually from the slaughter-houses. A hide weighs 6 to 7 seers and a skin 2 to 3 seers. Thus 7,424 maunds of hides and 1,000 maunds of skins can be had every year. Of these 4,400 maunds of hides are exported to Cawnpore and Calcutta and 575 maunds of skins to Cawnpore and Agra. The remaining 3,000 maunds of hides and 400 maunds of skins are tanned in the district. Prices are as follows :—

Cow hide Rs. 1-8-0 to Rs. 2 per *khal* according to size, weight and quality.

Bullock hide Rs. 2 to Rs. 2-8-0 per *khal* according to size, weight and quality.

Buffalo hide Rs. 3 to Rs. 3-8-0 per *khal* according to size, weight and quality.

Sheep and goat skins Re. 1 to Rs. 1-8-0 per *khal* according to size, weight and quality.

The census of 1911 returned 484 males and 202 female tanners.

The following are the chief centres of tanning :—

Orai tahsil.—Orai, Kusmilia, Bandholi and Gorhar

Jalaun tahsil.—Maikhi, Kathond Khurd, Kashipura, Kara, Ganjir, Amkhear and Kamatalpur.

Kalpi tahsil.—Kalpi, Etor, Ata, Hatnora and Masuariya.

Kunch tahsil.—Kunch, Dabar, Manpura and Ait.

The tanners turn out 2,800 maunds of tanned leather in a year. Aniline dyes are used. The process of tanning has been described in Walton's monograph on leather and is not repeated here.

Prices of tanned hides are as under :—

Cows Rs. 2-8-0 to Rs. 3 each and bullock Rs. 3-8-0 to Rs. 4 each.

The cost of tanning a hide is as follows :—

	Rs.	s.	p.
Price of a raw buffalo hide	3	0 0
Lime, 2½ seers for a hide at Rs. 2-8-0 per maund.	...	0	2 6
Babul bark, 10 seers at Re. 1 per maund	0	4 0
Miscellaneous	0	1 0
Total cost	3	7 6

A family thus gets eight annas a day. White Chamars tan hides, Chikwas tan skins. Tanned skins sell at Rs. 3 to Rs. 3-8-0 per skin. Skins are purchased by bhisties for buckets or bags and by drum-makers. Chickwas are generally meat sellers and tanning is only their subsidiary occupation. Kalpi is suited for a tannery. It is on the banks of the Jamuna and there is sufficient water supply. Babul bark is exported from the place to Cawnpore in large quantities. It has a colony of Chamars and Jalaun with other districts of Jhansi division will supply raw hides and skins.

(ii) *Shoe-making.*

The district has 84,512 male Chamars and 34,050 female Chamars, of whom 834 males and 170 females carry on shoe-making. About 2,700 maunds of tanned leather are used in the manufacture of shoes. Five pairs of Hindustani shoes are made out of one tanned hide and about 108,000 pairs of shoes are made in a year. A shoe-maker's family earns about Rs. 15 to Rs. 18 a month. A pair of Hindustani shoes sells for Rs. 2 to Rs. 3-8-0.

A few shops at Orai and Kalpi make shoes of English design with imported leather of inferior quality. Their quantity is negligible.

4.—*Miscellaneous.*

1. *Bones.*—In the note on tanning it has been mentioned that 49,600 head of cattle and 11,584 sheep and goats are slaughtered in the district every year. The total quantity of bones available from the dead bodies of these animals amounts to 6,779 maunds.

Bones are generally exported to Calcutta. The extent of exports could not be ascertained.

Bones sell at 12 annas per maund in the district.

2. *Fats.*—The district produces 3,720 maunds of fats. Fat is collected from the slaughter-houses by the butchers. A very small quantity of fat is consumed locally, and about 3,500 maunds of fat are exported to Calcutta, Madras, Ahmedabad and Cawnpore. Fat sells at Rs. 30 a maund. The exports are now falling, the decline being due to the closing of the Burma meat trade.

3. *Blood*.—It is wasted in the slaughter-houses now. Two years ago when the Burma meat trade was open the butchers used to boil it in iron pans, and when cool, to export it in tins to Calcutta.

4. *Fishing*.—In the Jalau district fishing is carried on during the rainy season, viz., July to September. Fish are caught by Kewats and Mallahs from the Jumuna, the Non and a stream called Arjun nadi.

The number of persons employed in fishing is noted below :—

Partially agriculturists.

		Males.	Females.
Mallahs	...	2,525	2,344
Kewats	...	239	234

These classes are mostly settled in the villages of Kalpi tabsil through which the Jumuna river flows.

Their method of fishing and the instruments used are :—

(1) Nets and "*pai*" (several nets joined together). A net is 45' × 15' and is made of cotton or jute strings with balls of *shisha* (lead) or clay attached at intervals of about a foot or so. Lead balls are imported from Cawnpore. Nets are woven by fishermen with meshes of one square inch. A net lasts one to three years. Jute nets are more durable.

(2) Line (*shisht*).

(3) Hooks (*bansi*). J-like hooks are imported from Norway.

Varieties of fish.—The following kinds of fish are found in the district :—

- | | |
|--------------------|---------------------|
| 1. <i>Rohu</i> . | 4. <i>Tengan</i> . |
| 2. <i>Besar</i> . | 5. <i>Gadaiya</i> . |
| 3. <i>Parhin</i> . | 6. <i>Jhinga</i> . |

About 75 per cent. of the catch consists of *gadaiya* (young fish) and *jhinga* (prawns).

Consumption of fish.—As a general rule, Hindus of higher castes do not eat fish. The fish-eating classes in the district would be about 18 per cent. of the total population.

The necessary supply of fish is not forthcoming even at Kalpi and Orai where fish are sold during rainy season. They are sold

by fishermen themselves. Fish about to spawn are said to emit an offensive odour and are rejected by well-to-do classes, but the poor classes like Chamars and Beldars make no discrimination. During the rainy season about 15 to 20 seers of fish a day are offered for sale in the markets of Kalpi and 5 to 10 seers at Orai. It is estimated that 80 maunds of fish are sold in the markets of Orai and Kalpi in a year. Fish are not sold in the Kunch and Jalaun markets.

Large fish sell from 4 to 8 annas a seer and small ones from 2 to 4 annas a seer.

Fishing at present is not paying at all. But the district is full of possibilities for its development. Fishermen are found in pretty large numbers here and the Jumna river abounds in fish. What is lacking at present is organization. It would be very easy to form societies of fishermen on a co-operative basis, as they are settled in large numbers in villages adjoining Kalpi.

5. *Tobacco.*—Area in acres under tobacco in the district of Jalaun :—

Year.	Tobacco area.		Yield per acre in maunds.	Normal year.
	Irrigated.	Unirrigated.		
1917-18 ...	154	148	Four maunds in irrigated area and three maunds in unirrigated area.	1921-22.
1918-19 ...	137	...	...
1919-20 ...	219	96	...	
1920-21 ...	118	1	...	
1921-22 ..	248	54	...	

In a normal year the average outturn amounts to 1,154 maunds of tobacco. The local dealers in tobacco prepare smoking tobacco out of it. About 600 maunds are consumed locally.

Import.

Kind of tobacco.	Quantity.	Place whence imported.
	Mds.	
Pounded tobacco ...	2,000	Farrukhabad and Monghyr.
Manufactured tobacco ...	300	Lucknow and Kanauj.
<i>Bidi</i> ...	200	Jubbulpore.

Export.—About 554 maunds are exported to Auraiya.

Price.—Pounded tobacco—Rs. 30 per maund.

Manufactured tobacco—Rs. 40 to Rs. 80 per maund according to quality.

Smoking tobacco—Rs. 12 per maund.

Bidis—1,000 *bidis* for Rs. 1-5-0.

Smoking tobacco.—The local dealers mix *shira* (juice) of molasses with tobacco and sell it as smoking tobacco. It is largely used by the agriculturists in the district.

5.—Oils.

(i) Pressing of oilseeds.

The following table shows the area and production of the various kinds of oilseeds grown in the district:—

Year.	Kinds of oilseeds.						Production in a normal year.
	Sesamum.		Linseed.		Rapeseed.		
	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	
1917-18	...	2,214	1,146	31,499	7	433	Five maunds per acre in irrigated area and four maunds in unirrigated on an average.

Year.	Kinds of oilseeds.						Production in a normal year.
	Besamum.		Linseed.		Rapeseed		
	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	
1918-19	...	1,753	91	325	21	58	The normal year for linseed and rapeseed is 1917-18 and for sesamum 1920-21.
1919-20	...	3,205	1,096	17,382	13	209	
1920-21	...	4,580	485	3,007	22	152	
1921-22	...	4,509	869	15,803	15	212	

The following table shows exports and local consumption in a normal year of the various oilseeds:—

Crop.	Export.	Local consumption for oil pressing.	For other purposes.
		Mds.	Mds.
Sesamum...	...	16,000	2,320
Rapeseed...	...	1,500	267
Linseed ...	128,326 maunds to Bombay, Calcutta, Cawnpore.	2,700	700
Mahua	2,000 maunds to Calcutta, Cawnpore.	5,000	...

Census report of 1911 shows that 1,393 males and 1,318 females were engaged in oil crushing.

Actual workers.	Males.	Females.
Whole-time ...	421	296
Partly agriculturists...	972	1,021

Oil pressing is mostly followed as a subsidiary occupation. Oil is crushed in ordinary *kolhus* of wood each worked by a bullock.

Capacity of a *kolhu* 10 to 12 seers a day of 10 hours.

Average content of oil in oilseeds 33 per cent.

Sesamum is crushed for eight months in the year and linseed and rapeseed for two months. Partial oil crushers mostly work for wages, retaining the oil-cake in lieu of the wage. It is difficult to form an exact estimate of the oil produced in the district, but the following is a rough estimate:—

Crop.	Sesamum.	Linseed	Rapeseed.	Mahua.
	Mds.	Mds.	Mds.	Mds.
Oil ..	5,330	900	500	1,660
Oil-cake ...	9,153	1,440	900	3,000
Wastage ...	1,517	360	240	340

The following are the average prices of oilseeds, oil, and oil-cakes in the district:—

	Seed.		Oil.		Oil-cake.	Remarks.
	Whole-sale.	Retail per maund.	ole-sale.	Retail per maund.	Retail per maund.	
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs.	Rs. a. p.	
Sesamum	6 8 0	6 12 0	20 0 0	22	4 0 0	Fed to cattle generally. Fed to cattle by oil crushers.
Rapeseed	6 8 0	7 0 0	21 0 0	22	2 0 0	
Linseed...	6 4 0	6 8 0	18 8 0	19	1 8 0	
	to	to				
	6 8 0	6 12 0				
Mahua...	3 8 0	4 0 0	13 8 0	15	...	Used as fuel.
	to	to				
	5 0 0	6 0 0				

Ordinarily the district does not export any oil. Orai and Kalpi import oil to a certain extent. No oilseeds are imported.

Seed is purchased in season for the oil crushers by *arhatias* (commission agents) and stocked in the latter's godowns on a charge of 12 per cent. interest. Payment by oil crushers is sometimes in cash and sometimes in kind. One family requires oilseeds worth Rs. 300 to Rs. 400 in a year. Oil crushers in towns have their own shops, while mufassil ones supply oil to fixed families called their *Kisans*. The daily earning of a *tehi* family may be gauged by the following :—

Expenses.

	Rs.	a.	p.
Price of 12 seers sesamum at Rs 6-8 0 per maund	1	15	0
Maintenance of a bullock	0	8	0
Total	2	7	0

Receipts.

Price of 4 seers of oil at Rs. 22 a maund ...	2	3	0
Price of 7½ seers oil-cake at Rs. 4 per maund	0	12	0
Total	2	15	0
Difference	0	8	0

Jalaun has no power mill. At Kalpi a few rotary *ghanis* worked by an oil-engine were set up, but the mill is closed now. The exact reason for its failure could not be ascertained as the proprietor is not in the district. The district produces more than 130,000 maunds linseed in a normal year, most of which is exported. Kunch and Kalpi are big markets for linseed. A small mill for crushing linseed ought to succeed, but a market for the oil and the cake will have to be found outside the district. Local agriculturists only use sesamum cake. The mill can also crush other seeds like mahua which is available in considerable quantities and can be easily imported from other districts of the Bundelkhand division. Labour will be available

as the district supplies a considerable number of labourers to the Cawnpore Mills.

(ii) *Essential oils.*

(a) *Khus* is found in about 600 acres in the following villages:—

- | | |
|-------------------|-------------------|
| 1. Chilli. | 11. Goran. |
| 2. Kusmilia. | 12. Dhanmi. |
| 3. Rund Timron. | 13. Dhargaon. |
| 4. Timron. | 14. Karwi Buzarg. |
| 5. Barsor. | 15. Karwi Khurd. |
| 6. Raisari Kalan. | 16. Kharka. |
| 7. Raisari Khurd. | 17. Bardar. |
| 8. Dakora. | 18. Gora. |
| 9. Nunsai. | 19. Karnura. |
| 10. Pur. | 20. Kathond. |

About 4,000 maunds of *khus* is dug up annually by Kunjars who were reported as 53 males and 63 females in the census of 1911. *Khus* sells at Rs. 5 to Rs. 8 per maund. About 3,450 maunds of *khus* are exported annually to Cawnpore and Jhansi and a little is used locally for making tatties. The Kanauj perfumers would be well advised to come to Orai and distil *khus* on the spot.

(b) *Keora*—Village Dhurat has a big *keora* grove which produces about 10,000 flowers every year. Dhurat is four miles from Ait railway station on Jhansi-Cawnpore section of Great Indian Peninsula Railway. Fuel is available locally and *keora* water ought to be distilled on the spot.

6.—Textiles.

A.—Cotton.

(i) *Dyeing and printing of cloth.*

Saiyadnagar and Kotra are two villages in the tahsil of Orai which were once famous for the dyeing of cloth. The former was celebrated for *zamrud* cloth ordinarily known as *kharwa* in the district of Jhansi. The industry has declined and only two families survive to do some dyeing work.

The latter had a local celebrity for *chunari* (cloth worn by women). This industry too has declined and only four families survive which can dye *chunari*. For further description, page 48 of the *Jalaun Gazetteer* may be referred. I think the industries of the two places would die out soon.

(ii) *Ginning and pressing.*

The district has four important markets for cotton (*kapas*) at Kunch, Kalpi, Madhogarh and Orai. In season the price of raw cotton ranges from Rs. 11 to Rs. 13 a maund. The exporters of cotton get their raw cotton ginned and pressed at Kunch. The sales are effected through *dalals* and a good deal of competition exists amongst purchasers.

The district has one ginning and pressing mill at Kunch which works from November to February. It has another ginning factory at Ait which is lying idle. A third factory at Kalpi is also lying idle at present. The proprietors Ram Kumar and Hari Krishna are disposing it off.

The following statement would show the local production of raw cotton, imports and exports of ginned cotton, etc. :—

Local production of cotton.	Imports of raw cotton for ginning.	Total.	Portion ginned by mills.	Portion ginned by hand.
Mds.	Mds.	Mds.	Mds.	Mds.
79,661	10,688 from Chirgaon 10,000 maunds from Dabra, etc. (Gwalior State).	100,349	88,971	11,378
Ginned cotton obtained from the factory at 86 per cent.	Ginned cotton obtained by hand ginning at 83 per cent.	Total ginned cotton produced in the district.	Export of ginned cotton after pressing.	
Mds.	Mds.	Mds.	Mds.	
31,140	3,793	34,933	24,474 to Bombay, Calcutta and Cawnpore.	

The rest of the cotton is used locally. Ginned cotton sells at Rs. 30 a maund on an average, and cotton seed at Rs. 8 a maund.

Cotton seeds.

Outturns.	Exports from the district.	Local use.
Mds. 57,831 maunds to the Punjab (all out-		Mds.
65,416 turn of the ginning factor.)		7,585

Eight hundred and eight males and 702 females are engaged on ginning cotton by hand. The process of ginning has been described by Mr. Silberrad in his monograph on cotton fabrics. On an average a person can gin from 5 to 9 seers a day and gets Rs. 1-8-0 to Rs. 1-12-0 a maund. The average of cotton ginned by hand by one person in a day works out to be 3 seers. This hardly gives him 2 annas a day. This is not a living wage. Power gins charge Rs. 2-12-0 a maund. There is room for hand spinners to raise their charges if they organize.

(iii) *Kapas.*

White-flowered cotton is grown in the district. Both *kabar* and *parwa* soils are preferred in the Orai tahsil, and *kabar* in Kalpi and Kunch. Cotton is grown in both *parwa* and *kabar* soils in the Jalaun tahsil.

The yield per acre of the cotton is 5 maunds in irrigated and 4 maunds in unirrigated area.

Statement showing the area and production of cotton during the last 8 years.—

Year.	Raw cotton.		Cotton with arhar.		Average outturn.	
	Irriga- ted.	Dry.	Irriga- ted.	Dry.	Irriga- ted.	Dry.
	Acres.	Acres.	Acres.	Acres.	Mds.	Mds.
1914-15 ...	...	1,392	14	29,650	1,581	159,320
1915-16 ...	...	1,365	17	20,820	...	taking the
1916-17 ...	...	2,094	6	30,322	...	proportion
1917-18 ...	3	4,876	522	24,407	...	of arhar
1918-19 ..	7	568	849	5,813	..	to be 40
1919-20	5	1,128	396	29,018	..	per cent.
1920-21 ...	15	999	1,188	18,699	...	of arhar
1921-22 ...	12	1,242	1	21,378	...	to 60 per cent. of <i>kapas.</i>

Trade classification, Jalaun cotton.—The staple is about 0·9" long and can be spun into a 120" to 144" long thread.

(iv) *Spinning.*

The district has no spinning mill. It produces a little hand-spun yarn. The non-co-operation movement gave a temporary impetus to this, but mill yarn is of better quality and cheaper and more easily obtainable. It is therefore preferred to hand spun yarn. Of the hand ginned cotton about 90 per cent. is used in quilts for padding. The rest is hand-spun. District produces 28,000 lbs. or 350 maunds yarn annually. Imports of yarn in a year amount to 1,800 bales of 400 to 500 lbs. each, equal to 87,800 maunds. Yarn made in Cawnpore, Ahmedabad, Hathras, Agra and Bombay mills is imported through Cawnpore. Yarn of 10½ and 12½ counts is generally used. Total consumption of mill hand-spun yarn would be about 9,400 maunds.

(v) *Weaving.*

With 7½ lacs lbs. of yarn the district should produce 837,760 lbs. of cloth, which at the rate of 3 yards to a pounds represents more than 25 lacs yards of cloth or 6 yards per head of population. The rest is all imported piece-goods.

Hand-loom weaving.—Hand-loom weaving is the most important industry of the district. There is one hand-loom weaving factory which is situated at Jalaun.

In 1911 the actual number of weavers was :—

	Males.	Females.	Total.
Partial agriculturists ...	880	91	...
Koris ...	4,429	2,746	7,175
Julahas ...	123	423	546

The important centres of weaving are Jalaun, Kalpi and Kunch. The following villages have also weavers in a fairly large number plying their trade :—

Jalaun.—(1) Dhamnan, (2) Sarawan, (3) Jaitpur, (4) Madhogarh, (5) Amkhera, (6) Syao, (7) Majhoria, (8) hora, (9) Tirson, (10) Kaklapur and (11) Tikri.

Kalpi.—(1) Ata, (2) Usargaon, (3) Etora, (4) Chheonk, (5) Babina, (6) Jalupur, (7) Sarsai, (8) Churkhi, (9) Damras.

Orai.—(1) Muhammadabad, (2) Garhar, (3) Minora, and (4) Ruradan.

Only coarse fabrics are woven as they are considered to be strong and durable. They are :—

Kalpi.—*Ekri, garha, dusuti*, shirting cloth, *dhotis, safas* and *dupatas*.

Kunch.—*Ekri, garha*, shirting cloth and *dhotis*.

Jalaun.—Fine *dhotis*, shirting and coating cloth, *pagris* and *mandil*; all these are the products of the hand-loom weaving factory described above.

Mill made yarn is mostly used. In Kunch mill yarn is used for warps and hand-spun for wefts. A bundle, locally known as "*pora*" of yarn is sufficient for one loom for one week. Prices range between Rs. 8 to Rs. 10 per bundle. Credit prices are 4 annas a bundle higher.

Throw shuttle looms are used. The process is given in Mr. Silberrad's Cotton Fabrics and is not repeated here. Wheat flour is used for sizing. Half seer wheat is said to be sufficient for one bundle.

Prices.—A *than* (piece) 12 yards \times 34" costs Rs. 2-8-0 to Rs. 3-12-0 and a *dusuti* piece Rs. 4 to Rs. 6.

Wages.—Of a family consisting of one weaver, his wife and two children may be calculated as follows. Women and children help in preliminary processes :—

			Rs.
Cost of one bundle yarn	...	...	9
Do. starch and dyes ...	...	...	1
			—
	Total	...	10
			—

This produces five pieces worth Rs. 14 to Rs. 16, leaving Rs. 4 to Rs. 6 as the family earnings of one week. Daily income comes to 10 annas only.

Marketing.—Dealers in yarn are not necessarily cloth merchants and weavers buy yarn from fixed dealers either on cash payment or on credit.

B.—Fibres.

(i) *Paper.*—The industry of making paper by hand flourished in Kalpi about a century ago, but it has died out now in competition with mill paper. Only seven families of “Kagazis” (paper makers) follow the profession now as a subsidiary occupation, and they too make very little paper, as, being dearer than mill paper, it commands no sale. A quire costs 12 annas.

The process followed by these people is only of academical interest now. Waste paper and pieces of old cardboard are soaked in water for several days until they are pulverized. Lime is then mixed with the soft mass which is then ground in a mill (*chakki*). The fine pulp thus obtained is washed and put in wooden vats. The mould is made of grass. A boy assists the paper maker who stirs the fluid pulp in the vat and dips the mould in it in such a fashion as to get an even layer of pulp on the mould. The sheet of paper on the mould is slowly laid on a piece of wet cloth which is spread on the floor by a boy assistant. Another sheet is then taken and spread on another wet piece of cloth laid over the first. Layer after layer is thus laid until 60 or 70 sheets are obtained. The whole is then pressed to take off as much water as possible. The sheets are then separated and pasted on walls to dry. When dry, they fall off the walls and are sized with rice starch which is applied by means of a brush. The sheets are dried and glazed by rubbing with stones. They are then ready for the market.

(ii) *Sann hemp.*—Area under sann hemp in the district is :—

		Acres.	Remarks.
1917-18	...	3,315	Average produce 3 maunds per acre. Normal year 1920-21.
1918-19	...	1,016	
1919-20	...	2,740	
1920-21	...	3,594	
1921-22	...	3,169	

Sann is grown in unirrigated tracts and *habar* soil is preferred for growing it. Jalaun tahsil has the largest area.

Zamindars some time refuse to allow cultivators to rot hemp in their tanks as retting makes water dirty. Stalks are kept under water for about a fortnight. Stalks stripped of their fibre are used as fuel. Leaves are left in the fields to rot with a view to increase the nitrogen content of the soil. The fibre is sold or twisted into ropes. Eleven thousand eight hundred and sixty-two maunds of sann hemp yield 2,945 maunds of fibre.

Rope making.—

	Males.	Females.	Remarks.
Actual workers	42	21	Found at Orai, Kunch and Kapli.
Partially agriculturists..	808	801	

In towns ropes are made for sale. One seer sann hemp bought at 6 to 8 seers a rupee is twisted into a rope 10 yards long worth 10 to 12 annas in 2 days. The outturn of ropes would be 8,000 in a year. Village people make ropes for their own use or for their zamindars, getting a nominal wage. Occasionally they sell their surplus product in the town markets. Part-time rope makers would be turning out 80,000 ropes in a year, varying from one to two seers in weight.

C.—Wool.

(i) *Wool.*—In 1920 the district had 22,647 sheep. They are sheared 3 times in a year, *Phagun* (February and March), *Asarh* (June and July) and *Kartik* (October and November). At the rate of 4 obbataks wool per shearing the district produces 500 maunds of wool. The district wool is of inferior quality. *Phagun* wool is the best, being cleaner and of longer staple than others. The following are the wool producing villages:—

Jalaun—Karontini, Amkhera, Sayari Madhogarh, Asnan, Galampura, Mangrie, Singhpura, Mathia Khurd, Malpur, Ooti and Porni.

Kunch—Umri, Ait, Rindhar, Dawar and Garirua.

Kulpi—Magrol, Urkara, Kotra, Himmatpur, Dumras, Baghora and Mahawa.

Orai—Goran, Somai, Kharka and Dadri.

450 maunds of wool is exported from the district from Jalaun tahsil to Auraiya, Kalpi to Cawnpore, Orai to Jhansi, and Kunch to Jhansi and Auraiya. Only 50 maunds are consumed locally in the manufacture of coarse blankets by Gadariyas.

Kunch, Orai, Jalaun, Kalpi and Madhogarh are markets for wool in the district.

Average prices of raw wool are:—

Inferior—Rs. 25-8-0 a maund.

2nd quality—Rs. 27 do.

1st quality—Rs. 29 do.

The district has 8,460 males and 7,864 females Gadariyas but they are mostly agriculturists. Few keep sheep, of which the number is comparatively very small.

(ii) *Blanket weaving.*—A few Gadariyas manufacture blankets on narrow looms out of wool carded and spun by them. Barley flour is used for sizing. A family takes 3 days in weaving a blanket 8' x 5' worth Rs. 3 to Rs. 4 and earns Re. 1-5-0 to Rs. 2 in a day.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

The district has at present no organised industries and its chief trade consists in mere exporting its agricultural products to different parts of the country and overseas. Its trade depends upon agriculture and is easily dislocated on failure of the crops. Bundelkhand is known for its droughts and famines, and the failure of crops combined with the dislocation of trade tells doubly upon the people. It is therefore very desirable that people give serious attention to organize the industries for which raw materials and other requisites are available locally. The industrial possibilities which struck me during the course of my enquiries are as under :—

1. *Tannery*.—The district exports a large quantity of raw hides and skins every year. The adjoining districts of Banda, Hamirpur and Jhansi can also supply a pretty large quantity of raw hides and skins. Babul plantations supply bark to the tanneries of Cawnpore. It has a large colony of tanners (Chamars) who are abandoning their own profession as it has become less paying than before and are migrating to the Cawnpore factories. The Jumna river flows through Kalpi and its water is said to be admirably suited for tanning purposes. With ample supply of raw hides and skins, with a large population of tanners, with facilities of drainage and abundance of babul bark, the district should start a tannery at Kalpi.

2. *Oil mill*.—The district produces a large quantity of oil-seeds, e.g., mahua seed and linseed, which are exported annually. As no attempt is being made to return the nitrogenous element in the shape of manure to the soil, the law of diminishing returns has actually begun to operate in a large area of the district. If an oil plant is set up for crushing oilseeds, it would not only

find employment for the local labour, but it would also help the fertility of soil.

A gentleman at Kalpi set up a few rotary *ghanies* worked by an oil-engine for crushing oil-seeds. The attempt failed as the machinery received was not efficient. The district can build up a profitable industry of oil pressing, if a capitalist starts an oil mill.

3. *Khus and keora*.—The district exports about 4,000 maunds of khus every year. It can be utilised on the spot by distilling water and preparing scent. Fuel can be obtained at a cheap rate locally.

In village Dhurat of Orai tahsil a big keora grove yields a pretty large quantity of keora flowers which can also be utilised in distilling Keora water.

CHAPTER IV.

STATISTICS.

1.—Chemicals.

(i) *Saltpetre*—

Number of persons employed.—80 families of Lunias.

Wages.—Rupees 70 per year per family.

Outturn.—500 maunds out of which 100 maunds used locally and 400 maunds exported to Cawnpore, Jhansi and Auraiya (Etawah district).

(ii) *Reh*—

Raw material.—Obtainable from 223 acres.

Local use.—200 maunds.

(iii) *Kankar*—

Outturn.—25,000 maunds lime prepared.

Prices.—1st quality Rs. 20 to Rs. 22 per maund.

2nd " " 12 " " 14 " "

2.—Leather.

(i) *Tanning*—

Raw materials.—(1) Cows, buffalo hides, 7,425 maunds.

(2) Goats and sheep, 1,000 "

Local use.—(1) 3,000 maunds.

(2) 400 "

Exports—

Quantity.—(1) 4,400 maunds.

(2) 575 "

Places of consignment.—(1) Cawnpore, Calcutta.

(2) Cawnpore and Agra.

Prices.—(1) Cow Rs. 1-8-0 to Rs. 2 per *khal* (hide).

(2) Bullock Rs. 2 to Rs. 2-8-0 per *khal* (hide).

(3) Buffalo Rs. 3 to Rs. 3-8-0 per *khal* (hide).

(4) Sheep and goat Rs. 1 to Rs. 1-8-0 per *khal* (skin).

Number of persons employed.—Tanners—484 males and 202 females (Chamar tanners).

Wages.—Eight annas per day.

Outturn.—2,800 maunds of tanned leather annually.

Prices.—Tanned buffalo hide Rs. 5 to Rs. 6 per piece.

Cow hide Rs. 2-8-0 to Rs. 3 per piece.

Bullock hide Rs. 3-8-0 to Rs. 4 per piece.

Goat and sheep Rs. 3 to Rs. 3-8-0 per piece.

(ii) *Manufacture of boots and shoes—*

Import.—2,700 maunds of tanned leather.

Local use.—2,700 maunds.

Number of persons employed.—834 males and 170 females.

Wages.—Eight annas to 10 annas per day.

Outturn.—1,08,000 pairs of shoes annually.

Prices.—Rupees 2 to Rs. 3-8-0 per pair according to size and quality.

- 3.—Miscellaneous.

(i) *Bones and fats:—*

Annual outturn.—6,779 maunds bones, 3,720 maunds fats.

Local use.—220 maunds fats.

Exports.—All, and 3,500 maunds fats.

Prices.—Bones 12 annas per maund, and fats Rs. 30 per maund.

(ii) *Tobacco:—*

Annual outturn—1,154 maunds.

Local use.—600 maunds.

Exports.—554 maunds to Auraiya (district Etawah).

Prices.—

1. Pounded tobacco Rs. 30 per maund, 200 maunds from Farrukhabad and Monghyr.
2. Manufactured tobacco 300 maunds from Lucknow and Kanauj at Rs. 40 to Rs. 80 per maund.
3. Bidis from Jubbulpore at 1,000 bidis for Re. 1-5-0. Smoking tobacco made locally and sold at Rs. 12 per maund.

4.—Oils.

(i) Oil pressing.

Raw material.—

	Sesamum. Mds.	Linseed. Mds.	Rape seed. Mds.	Mahua seed. Mds	Cotton seed. Mds.
Outturn ...	18,320	131,726	1,767	25,000	65,416
Export ...	...	128,326	...	20,000	57,831
		to Bombay, Calcutta, Cawnpore.		to Calcutta, Cawnpore.	to Pun- jab.
Local use	18,320	3,400	1,767	5,000	7,585

Prices.

(Rupees per maund.)

Oil seeds.—

Retail ...	6/12	6/4	7/-	4/- to 6/-	4/-
Wholesale ...	6/8	6/-	6/8	3/8 to 5/-	3/-

Oil.—

Retail ...	22/-	19/-	22/-	15/-	...
Wholesale ...	20/-	18/8	21/-	13/8	..

Oil-cake.—

Retail ...	4/-	1/8	2/-	...	...
Wholesale ...	...	...	...	...	...

Manufacture.—*Number of persons employed.*—

	Males.	Females.
Actual workers ...	421	296
Partially agriculturists ...	972	1,021

Wages.—Eight annas per day.*Outturn.*—

	Oil Mds.	Oil-cakes. Mds.
Sesamum ...	5,330	9,153
Linseed ...	900	3,000
Rape seed ...	500	900
Mahua seed ...	1,660	1,440

(ii) Keora and Khus.

Raw materials.—

	Khas. Mds.	Keora.
Outturn ...	... 4,000 ...	A grove of keora
Local use ...	... 550	at Dhurat; 10,000
Export ...	... 8,450	keora flowers can
	to Cawnpore	be gathered in
	and Jhansi.	season.

Prices.—Rupees 5 to Rs. 8 per maund.

Number of persons employed.—Kanjars—53 males, 64 females.

5.—Textiles.

A.—COTTON AND COTTON FABRICS.

(i) *Ginning and pressing.*

Raw material.—Kapas 79,661 maunds.

Import.—10,000 maunds from Gwalior State and 10,688 maunds from Chirgaon for being ginned and pressed at Kalpi.

Export.—Nil. Ginned cotton is exported and not Kapas.

Local use.—Ginned cotton used.

(a) *Household industry of ginning and cleaning.*

Number of persons employed—800 males and 702 females.

Wages.—Rupees 1-8-0 to Re. 1-12-0 per maund.

Outturn.—11,378 maunds (Kapas) is ginned by hand and 8,793 maunds ginned cotton obtained.

Prices.—Kapas (raw cotton) at Rs. 13 a maund.

Ginned cotton at Rs. 30 a maund.

Cotton seed.—7,585 maunds cotton seed produced locally and used locally.

Export.—No cotton ginned by hand exported. Locally used.

(b) *Cotton ginning and pressing.*

New Moffusil Company, Limited, Kunch.

Year.—1921-22.

Machinery.—42 Double Roller Cotton Gins run by steam engine of 62 H. P. capacity of a gin 50 to 60 lbs. per hour working for 11 hours a day.

One Hydraulic press. Capacity of the press 125 bales per day.

Number of hands employed.—Unskilled labour 60 women and 40 men.

Skilled labour 15 men.

Wages—Unskilled 4 annas per day (for women) and 8 annas per day (for man).

Skilled Rs. 534-9-0 a month from November to February.

Raw material—Kapas (raw cotton) 88,971 maunds.
(10,688 maunds Chirgaon cotton).
(10,000 maunds Native State cotton).
(68,283 maunds local cotton).

Commission for ginning and pressing.—Rupees 2-12-0 per maund for ginning and Rs. 7 per bale for pressing. The mill works on commission only.

Annual outturn.—Weight 31,140 maunds or 6,228 bales.

Export.—24,474 maunds baled cotton to Calcutta, Bombay and Cawnpore.

Remarks.—Density of pressing 16" × 4' × 15" high, ginning 36 per cent.

(ii) Weaving.

Raw material.—Yarn.

Imports.

1. *Quantity*—1,800 bales of 400 lbs. each.
2. *Place of origin*—Cawnpore.
3. *Value.*—Rs. 320 to Rs. 350 per bale.

Local use.—28,000 lbs. of yarn locally produced.

(a) *Household cottage industry of weaving:—*

Number of persons employed.—

	Actual workers.		Partial agriculturists.	
	Males.	Females.	Males.	Females.
Koris ...	4,429	2,746	880	91
Julahas ...	123	423	...	...

Outturn in weight.—837,760 lbs. of cloths.

Wages.—Ten annas per day.

(b) *Hand-loom factory.*

Year.—1921-22.

Owners.—Ram Chandra.

Situation.—At Jalaun.

Machinery.—12 fly-shuttle hand-loom capacity 10 yards, to
12 yards per day per hand-loom.

Number of hands employed.—4 skilled, 17 unskilled.

Wages (skilled).—Rupees 20 per month each, 8 annas per man
per day.

Raw material.—40 bales imported from Cawnpore mostly
no. 20, 34.

Annual outturn.—Cloth to the value of Rs. 15,000 turned
out every year.

Export.—There are no exports.

B.—FIBRES.

Sann hemp.

Raw material.—11,862 maunds, 2,945 maunds (fibres).

Local use.—2,945 maunds.

Price.—Six seers to 8 seers per rupee.

Household or cottage industry of rope making:—

Number of persons engaged—

	Males.	Females.
Actual workers ...	43	21
Partial agriculturists ...	808	801

Wages.—Six annas to eight annas per day.

Outturn.—80,000 ropes

Price.—10 annas to 12 annas per rope.

C.—WOOL.

Outturn.—500 maunds of wool.

Local use.—50 maunds.

Export.—450 maunds to Jhansi and Auraiya.

Prices.—

Inferior	Rs. 25-8-0	maunds.
2nd quality	„ 27-0-0	„
1st	„ 29-0-0	„

CHAPTER V.

DIRECTORY.

1. List of banks.

District Co-operative Bank, Orai.

2. List of factories.

Ginning factory and press at Kunch owned by new Mofassil Co., Limited.

Ginning factory at Ait owned by Messrs. Kamapat Juggi Lal (lying idle).

3. List of cloth dealers.

Mithulal Mathura Prasad, Orai.
 Ram Lal Taik Chand, Orai.
 Ajudhya Prasad Kalka Prasad, Orai.
 Bachi Lal Bhagwati Prasad, Orai.
 Ghasi Ram Bansi Dhar, Orai.
 Lachman Prasad Ram Gopal, Orai.
 Bindraban Mohan Lal, Orai.
 Nanhun Ramdin, Kunch.
 Badri Bazaj, Kunch.
 Ram Bharose, Kunch.
 Gaurilal Raghubar, Kunch.
 Ram Sewak Ram Charan, Kunch.
 Lalman Ram Din, Kunch.
 Ganpat Lal Mohan Lal, Jalaun.
 Mauji Lal Jagannath, Jalaun.
 Kunj Behari Lal Phundilal, Jalaun.
 Bhawani Din Bhagwan Din, Kalpi.
 Ram Kurwa Karkrishna Dass, Kalpi.
 Gulzari Lal, Kalpi.
 Bachohi Lal, Kalpi.

4. List of yarn shops.

Ganpat Lal Mohan Lal, Jalaun.
 Murali Dhar Ramlal, Jalaun.
 Lalla Umrai, Kunch.
 Badri Bazaj, Kunch.
 Lachhi Soni, Kunch.
 Murali Dhar Nagaich, Kunch.
 Behari Kori, Orai.
 Raghunandan Lal, Kalpi.

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Jaunpur District

By
B. R. BHATTA, L.M.E.



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FOREWORD.

JAUNPUR is a district which was very flourishing in the Nawabi days, but its manufactures have almost disappeared now. The few industries which are left are of very little importance. Its paper industry has died out. The little papier mache work which flourished for some time under the fostering care of a Collector has also declined and the dependents of a few workers in the art have taken to the profession of book-binding. The manufacture of indigo has suffered a similar fate in competition with the German synthetic analogue. A small amount is still produced. A temporary stimulus was given to the industry by the war when the supply of foreign dye was shut out. With the return of normal times and the import of German indigo the cultivation of vegetable indigo is steadily diminishing, with the result that the area under this crop has dwindled down to 773 acres from thousand acres that it used to be in former days. Only two taluqdars are manufacturing indigo in the district now. Sugar there is ample in Jaunpur district, but as this item has formed the subject of investigation by a separate committee appointed by Government for the purpose, statistics of the sugar industry have not found a place in this report.

Of the existing industries, the first place in point of fame should be given to the perfumery of Jaunpur. But unfortunately for this local industry the synthetic products are again in competition, and there is every danger of the natural product being affected adversely. Improved stills are wanted and experiments to that effect should be undertaken by the Industrial Chemist who has already done some work there. The district is also famous for its fireworks. But a lot of improvements are required there. The district has large area of reh, and these should be worked. Similarly, there is a large amount of sann produced in the district, which is almost all exported to Calcutta. Better use should be made of it in the district. The quality of sann also requires improvement by better processes of cultivation, retting, extraction and washing. Weaving brings

some money into the district, but generally throw-shuttle looms are in use. Fly-shuttle looms are coming in use where their advantages have come to the notice of the weavers. Better demonstration of these looms is required. It will pay loom manufacturing factory to arrange to give such demonstrations, Government giving facilities. Oil-seeds are wanting better treatment and a small power press should pay.

Mr. Gadre has revised the report and deserves the department's thanks. I have also to acknowledge the help rendered by—

1. Khan Bahadur Maulvi Muhammad Fasih-ud-din, B.A., P.C.S.,
Collector and Magistrate, Jaunpur.
2. Babu Dina Nath Dey Sahab, Secretary, Municipal Board,
Jaunpur.
3. Mr. Sajjad Husain of the firm of Messrs. Sajjad Husain
Abdul Karim, Razwi Khan, Jaunpur.
4. B. K. Ghare, Esq., Agricultural College, Cawnpore.

CHAMPA RAM MISRA.

The 29th May, 1923.

CHAPTER I.

INTRODUCTION.

1.—General features of the district.

(a) *Boundaries and area.*—The district is bounded on the west by the districts of Partabgarh and Allahabad; on the south by Mirzapur and Benares districts; on the east by Ghazipur and Azamgarh districts; and on the north by the Sultanpur district. Its area is 1,550 square 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 year 1911: population 1,156,254; density about 746 persons to the square mile.

(d) *Forest area.*—There are no forests in the district. Small areas covered with thatching grass are occasionally to be seen besides patches of lands covered with dhak trees which are found in almost all parts of the district, the largest being near Multiganj in pargana Daryapar, at Hariharpur, on the Gumti in pargana Chandwak and on the banks of the Sai in Khapraha.

(e) *Railways.*—

Oudh and Rohilkhand Railway loop line, 38 miles distance: Jalalganj, Zafrabad, Jaunpur, Mihrawan, Kheta Sarai, Shahganj and Bilwai stations.

Oudh and Rohilkhand Railway main line, 10 miles distance: Janghai, Nibhapur and Badshahpur stations.

Oudh and Rohilkhand Railway, Allahabad-Jaunpur branch, 24 miles distance: Janghai, Jarauna, Barsatbi, Bhanaur, Mariahu, Salkhapur, Zafrabad and Jaunpur stations.

Bengal and North-Western Railway, Shahganj-Ballia branch: starts from Shahganj and passes through the district for a distance of about two miles.

Bengal and North-Western Railway, Jaunpur-Aunrihar branch, 29 miles distance: Jaunpur, Keshopur, Muftiganj, Kerakat, Dhobi and Patrahi stations.

(f) *List of Ferries.*

River.	Ferries.
Gumti	... Jagdishpur, Baghari, Mendha, Gajainpur, Krishnapur, Pilkichha, Sutauli, Gathaina, Narauli, Chauri, Belwan, Baizapur, Saleudi, Chhunchha, Kouhda, Kalichabad Mianpura, Pachhatia, Jamaitha, Uttargawan, Zafarabad, Bibipur, Belaon, Rajapur, Bhadehri, Pasewa, Mai, Tandwa, Kirakat, Bhitri, Mahadewa, Hariharpur, Chaudwak, Sarepur, Kakrahwa, Banspati and Barahpur.
Sai	... Kutidhirdas, Karandhi, Karchhauri, Pachokar, Ramdayalganj and Belwa-Ramsagar.
Bisuhi	... Jamalapur.

(g) *List of roads.*

Metalled roads—	Miles.
1. Allahabad-Jaunpur and Gorakhpur road ...	44
2. Jaunpur-Benares road ...	15
3. Jaunpur-Fyzabad road ..	21
4. Jaunpur-Sultanpur road ...	18
5. Jaunpur-Ghazipur road ...	15
6. Jaunpur-Khuthan road ...	9
7. Jaunpur-Zafarabad road ...	6
8. Khuthan-Kheta Sarai road ...	7
9. Jaunpur-Mizrapur road...	24
10. Benares-Azamgarh road ..	7
Unmetalled roads—	
1. Kirakat-Jalalganj and Mariahu road ...	22
2. Mariahu-Machhlishar road ...	13
3. Jaunpur-Khapraha and Shujanganj road ...	21

	Miles.
4. Zafarabad-Deokali and Kirakat road ...	12
5. Badshahpur-Sujanganj, Khutaban and Fyzabad road	48
6. Kalinjara-Machhlishahr, Bambnion and Partabgarh road	17
7. Barawan-Keshopur and Benares road ...	24
8. Machhlishahr-Sujanganj and Partabgarh road	16
9. Badlapur-Koeripur and Sultanpur road ...	13
10. Khapraha-Sukhlalganj road ...	15
11. Mariahu-Tarti and Benares road ...	10
12. Khuthan-Narindpur and Sarpatha road ...	12
13. Aliganj-Tiara road... ..	18
14. Bakhsha-Mahrajganj and Partabgarh road ...	18

Besides the above, there are about 100 miles of short and fifth and sixth class roads which are hardly passable during the rainy season.

(h) List of market places.

Tahsil.	Locality.	Market days.
Jaunpur ...	Terhwa ...	... Sunday, Wednesday and Friday.
	Malhni ...	... Sunday and Thursday.
	Shambhuganj	... Ditto.
	Banjaripur	... Tuesday and Saturday.
	Gaura ...	... Ditto.
	Sambhalganj	... Ditto.
	Aonka ...	... Ditto.
	Kajgaon...	... Sunday, Wednesday and Friday.
	Teji Bazar	... Sunday and Wednesday.
	Sarai Tiloki	... Monday and Thursday.
	Gajadharganj	... Monday and Friday.
	Shambhuganj	... Sunday and Thursday.
	Khapraha	... Ditto.
Sakrara ...	... Tuesday and Saturday.	
Daunrus	... Ditto.	
Kirakat ...	Chandwak	... Daily.
	Narhon ...	... Wednesday and Saturday.
	Mufsiganj	... Daily.
	Kirakat ...	... Wednesday and Saturday.
	Jaigopalganj	... Daily.

Tahsil.	Locality.	Market days.
Kirakat ...	Thana Gaddi ...	Daily.
	Rehti ...	Do.
	Kusia ...	Do.
	Jalalpur ...	Sunday and Wednesday.
	Majhgawan ...	Ditto.
	Mathurapur ...	Monday and Friday.
Mariahu ...	Mariahu ...	Daily.
	Sukhlalganj ...	Tuesday, Thursday and Saturday.
	Babaganj ...	Tuesday and Saturday.
	Gulzarganj ...	Monday and Friday.
	Jamua ...	Monday.
	Shudhinpur ...	Sunday and Wednesday.
	Barsathi ...	Ditto.
	Rampur Dhanua ...	Daily.
	Dhanaur ...	Tuesday, Thursday and Saturday.
	Pariat ...	Sunday and Thursday.
	Alamganj ...	Monday, Wednesday and Thursday.
	Anandpur ...	Monday, Wednesday and Friday.
	Raipur ...	Monday, Wednesday and Friday.
	Nagoh ...	Tuesday and Saturday.
	Gopalapur ...	Daily.
	Newaria... ...	Do.
Bhawaniganj ...	Do.	
Tarti ...	Do.	
Machhlisahar	Machhlisahar ...	Sunday, Tuesday, Wednesday and Friday.
	Mirganj ...	Sunday and Wednesday.
	Baraipur ...	Sunday and Thursday.
	Mustafabad ...	Tuesday and Saturday.
	Madbpur ...	Ditto
	Ramganj ...	Tuesday and Friday.
	Sarai Bika ...	Ditto.
	Badsbahpur ...	Sunday and Thursday.
	Gariaon ...	Tuesday and Saturday.
	Bamhniaon ...	Monday and Friday.
	Sonaltha ...	Ditto.
	Bhilampur ...	Ditto.
	Bhagwanpur ...	Ditto.
Sujanganj ...	Wednesday and Saturday.	

Tahsil.	Locality.	Market days.
Machhlishahr	Balwarganj	... Wednesday and Saturday.
	Belwar	... Ditto.
	Sarni Bhogi	... Saturday and Thursday.
	Gaddopur	... Ditto.
	Ghurepaj	... Tuesday and Friday.
	Maharajganj	... Tuesday and Saturday.
	Himmatnagar	... Monday and Thursday.
Shahganj ...	Arsiwan	... Tuesday and Saturday.
	Patti Narindpur	... Ditto.
	Shahganj	... Ditto.
	Chetganj	... Wednesday and Saturday.
	Surapur	... Ditto.
	Jawadganj	... Ditto.
	Khuthan	... Ditto.
	Gabhiran	... Wednesday and Saturday.
	Samodhpur	... Tuesday and Friday.
	Pilkichha	... Ditto.
	Tighra	... Ditto.
	Rudhauri	... Sunday and Thursday.
	Dasupur	... Ditto.
	Baragaon	... Monday and Friday.
	Garha	... Sunday.
	Pataila	... Monday.
	Bansganj	... Thursday.
	Ghauspur	... Saturday.
	Kheta Serai	... Sunday and Wednesday.
	Gurari Khalilpur	... Ditto.
	Mani Kalan	... Ditto.
	Koeripur	... Ditto.
	Bahripur Kalan	... Monday and Friday.
	Thakurganj	... Wednesday and Saturday.
	Singramau	... Sunday and Thursday.
	Hariharganj	... Ditto.
	Badlapur	... Tuesday and Friday.
Shahpur	... Monday and Thursday.	
Tiara	... Wednesday and Saturday.	
Mendha	... Sunday and Friday.	
Ghansampur	... Tuesday and Friday.	

(i) List of fairs.

Tahsil.	Locality.	Fair.	Date.
Jaunpur r	Jaunpur	... Urs Panja Sharif	Phagu Badi 9th.
	Do.	... Ashnan	... Kartik Sudi 15th.
	Do.	... Muharram	... Muharram 10th.

Tahsil.	Locality.	Fair.	Date.
Jaunpur	Jaunpur ...	Chehlum ...	Safar 20th.
	Chaukia ...	Chaukia Mata... ..	Chhait Sudi 8th.
	Pachhatia ...	Ramlila ...	Kuar Sudi 15th.
	Utrejpur ...	Sainath Mahadeo	Phagun Badi 14th.
Mariahu	Mariahu ...	Dasehara ...	Kuar Sudi 10th.
	Gutwan ...	Do. ...	Kuar Sudi 14th.
	Bareri ...	Do. ...	Ditto
	Aunraila ...	Sheoratri ...	Phagun Badi 4th.
	Diawan ...	Do. ...	Ditto
	Barsathi ...	Dasehara ...	Kuar Sudi 10th.
Machhli-shahr.	Karchhuli ...	Sheoratri ...	Phagun Badi 14th.
Shah-ganj.	Ghauspur ...	Ghauspir ...	Rabi-us-sani 12th.
	Ashrafpur ...	Chausathi Bha-wani.	Every Tuesday in Sawan and Phagun.
	Singhwal ...	Dasehara ...	Kuar Sudi 10th.
	Sonawan ...	Do. ...	Ditto
Kirakat	Rajapur ...	Tirmohani ..	Kartik Sudi 15th.

CHAPTER II.

Description of the various district industries.

I.—Art industries.

Naicha making.—About a dozen families of Muhammadans in Jaunpur town are engaged in the work of making and ornamenting naichas or pipes for tobacco smoking. Coloured cloth is wrapped round reeds and ornamentation is done with kalabatun. Mostly imitation kalabatun is used. Naichas are of two kinds, changanis and kulfidars. Changanis are mostly used in the villages and kulfidars in the towns. Reeds for making naichas are imported from Pilibhit and their present price is about Rs. 30 per thousand. A reed is about 4 or 5 feet long. At one time the industry was in a very flourishing condition and naichas were sent from here to even distant places such as Assam, etc., but now the industry has much declined due to the general rise in the prices.

The following are some of the present prices :—

Changanis from 8 annas to 12 annas each.

Kulfidars from 12 annas to Rs. 5 each.

It takes from one day to a week for a man to make a naicha according to its quality and workmanship. The earning of a man in this industry is about 8 annas per day, but the naicha makers generally carry on some other work side by side with it and most of them have shops for selling caps, etc. Generally men do this work.

II.—Building materials.

(a) *Wood and timber.*—Wood and timber are not imported here from outside, but there are about half a dozen shops in the town which keep chaukats, planks, etc., of ordinary wood like mauha, neem, mango and babul for sale. These people purchase trees in the neighbouring villages like Muftiganj, Bachhapur and Bilkhara. A tree is obtained at from Rs. 10 to Rs. 50

according to its size. Wood-cutters are paid at the rate of about 10 annas per day. Cartage is paid at the rate of about 8 annas per mile per cart.

The following are some of the present prices :—

Mahua beams 11' × 6" × 7" Rs. 6 each.

" " 9' × 6" × 7" Rs. 5 "

" " 7' × 6" × 7" Rs. 4 "

Neem beams 11' × 6" × 7" Rs. 5 "

" " 9' × 6" × 7" Rs. 4 "

" " 7' × 6" × 7" Rs. 3-8 "

Mango planks 5½' × 1½' × 1½" Rs. 4 to Rs. 6 pair.

" " 5½' × 1' × 1½" Rs. 1-12 to Rs. 2-8 pair.

Chaukhats Rs. 2-8 to Rs. 4 each.

Babul wood is used for making bullock cart wheels and wood sufficient for making two wheels is obtained at Rs. 10 to Rs. 12. The smaller cuttings are used as fuel and are sold at about Re. 1 per maund.

Wages of carpenters range from 12 annas to 14 annas per day and sawyers get about 8 annas per day.

(b) *Building stone.*—Stone for building purposes is imported into Jaunpur from Karwi and Bahilpurwa on the Jhansi-Manikpur section of the Great Indian Peninsula Railway, Shankargarh on the Jubbulpur line and Dagmagpur, Mirzapur and Chunar on the main line of the East Indian Railway. Mirzapur stone is said to be superior in quality and is largely used.

The following are some of the present prices of stone :—

6' × 2' × 6" Rs. 7 to Rs. 8 each.

6' × 2' × 3" Rs. 3-8 to Rs. 4 each.

4' × 1' × 1½" Rs. 60 to Rs. 70 per 100 pieces.

3' × 1' × 1½" Rs. 45 to Rs. 50 per 100 pieces.

Chakkis for grinding purposes, to be driven by bullocks, of sizes 2', 2½' and 3' in diameter are manufactured and kept ready for sale. The wages of stone-dressers range from 12 annas to Re. 1-4 per day. A man can make a chakki in three or four days. Chakkis sell for Rs. 15 to Rs. 28 per pair according to size.

(o) *Brick making.*—There are about 7 brick kilns (all of the Bull's patent trench kiln type) in Jaunpur. The brick kiln of one Mohammed Hussain is situated at Ahmedpur on the Jaunpur-Zafarabad road about 8 miles from Jaunpur. Brick making is carried on only for eight months in the year and remains closed during the rainy season. About 4 lakhs of bricks are arranged in the kiln at a time, and when baking starts about 12,000 are taken out every day and replaced by the same number of sun-dried bricks. Out of these 12,000 bricks, about 10,000 are of the first class and about 2,000 of inferior quality. Pathai or moulding is paid at the rate of Re. 1-4 per thousand. Water is supplied by the owner for which there is one pur (or bucket) which costs Re. 1 per day. Three men work on one mould and turn out about 1,000 bricks in a day. About 200 cubic feet of coal is required daily for one kiln, the present price of which is about Rs. 13 per ton. The royalty for the land is paid at about Rs. 16 per bigha to the zamindar and a further sum of money is paid for the earth used at the rate of about Rs. 12 per lakh of bricks made, besides some nazrana. The capital required to start a work of this size is estimated to be about Rs. 15,000:

III.—Chemicals.

(i) *Reh.*—There is a considerable area of usar land in several compact groups, specially in Maehhlishahr tahsil; but besides the use of reh for the manufacture of soap, tobacco or a little of crude glass, it is not at all utilised for any other purpose. No saji is manufactured.

The following areas have been returned under reh in the various tahsils of Jaunpur :—

Tahsil.	Area under reh in acres.
Jaunpur	371
Maehhlishahr	8,100
Kirakat	900
Mariahu	24
Shahganj	152

Reh for the tobacco industry is obtained from villages about 4 or 5 miles from the town. Nothing has to be paid for collecting

it, and a man getting 6 annas a day can collect a cart load (about 20 maunds) of it in a day for which cartage is paid at the rate of about 8 annas per mile and the octroi-duty is 8 annas per cart load. The cost of a cart load containing about 20 maunds would, in the city, come to about Rs. 4 to Rs. 5 according to distance. Generally the tobacco manufacturers make their own arrangements for bringing reh.

(ii) *Saltpetre refining.*—Saltpetre is refined in several villages such as Chatain, Dih, Pura, Kheta Sarai, Suitha Kalan, Takhe, Sari and Arsia mostly of the tahsils of Shabganj and Maohlishahr by Luniyas.

Crude saltpetre.—Nitrous earth containing saltpetre is collected from the neighbourhood of old habitations and water is allowed to percolate through it. This water is then boiled in iron pans till the point of saturation is reached, which it does in about 15 hours. On cooling, crude saltpetre crystallizes on the sides of the pan. In one charge of the pan about 3 seers of saltpetre is obtained which is sold to the refiners. Its present price is Rs. 3 to Rs. 4 per maund according to its quality. A portion of it is also used by goldsmiths for cleaning ornaments. The work of refining is only carried on for about eight months in the year, and is closed during the rainy season.

Refined saltpetre.—A large refinery belonging to one Babu Murli Dhar is situated at Ram Bagh in Jaunpur, about a mile from the town. This factory is working for the last two years. Crude saltpetre is imported from the villages of Mariahu, Maohlishahr, Dalganj, Rampur, Bhadohi, etc. About 15 maunds of it is treated at one time in a pan and about five maunds of refined saltpetre is recovered. Common salt invariably separates during the boiling and has to be fished out. The concentrated liquor of saltpetre thus ultimately contains a comparatively small quantity of common salt left in it. The concentrated liquor is transferred to wooden crystallising vats and allowed to stand at rest for at least three or four days to enable a proper deposition of the saltpetre crystals. There is at present one pan working and there are about 20 such vats. Common salt separated during the refining operations is destroyed as it does not pay the manufacturer to pay

the Government duty on it. The Government licence fee for a refinery of this kind is Rs. 50 per annum. Crude saltpetre is purchased at Rs. 3 to Rs. 4 per maund according to its quality, and the refined saltpetre is sold at about Rs. 10 per maund. Six men are employed at present and their wages are from Rs. 16 to Rs. 20 per month. About 3 maunds of coal is burnt daily. All the manufactured saltpetre is exported to Calcutta and sold there through brokers.

(iii) *Manufacture of soap.*—The district has two factories at Badshahpur for the manufacture of soap for washing clothes. One of them has been working for the last 30 years. Neem and mahua oils are used, and are obtained from the neighbouring village of Ismailganj in Allahabad district; it is said that there are several oil mills. The present price of neem oil is Rs. 14-8 per maund and that of mahua oil Rs. 16 per maund. Reh is purchased from the neighbouring villages of Nargunnah, Bura-gaon and Hema-ka-pura, where there are about a dozen families of Churiharas who collect reh, clean it and sell it to the soap makers as well as to the country tobaccoists. Reh is cleaned by pouring water on it, when by the heat of the sun the saline efflorescence comes at the top and dries up in the form of thin layer known as papri. The price of reh is about 5 maunds to the rupee. Kankar is burnt into lime locally. It was formerly obtained locally, but the quarries are now exhausted, and it has to be imported from the neighbouring district of Partabgarh at about Rs. 36 per wagon of 10 tons. About 600 maunds of reh and about eight wagons of kankar are required annually for this one factory alone. At present four men are employed at 4 annas per day and the work is supervised by the owners themselves. The manufacturers are unwilling to give out the exact proportions of the various ingredients used by them as they consider it to be a trade secret. The process of manufacture is very crude. Lime and reh mixed in equal quantities are filled in earthen vats having holes at the bottom and water is allowed to percolate through. The process is repeated twice, and this water and oil in certain proportion are then boiled in iron pans on slow fire for about three days, after

which the mixture is poured on gunny cloths and is made into balls when cool. The process is similar to the modern cold process of soap manufacture. About 400 maunds of soap is manufactured annually, and all of it is exported to Nepal where the factories have fixed customers. The present price of this soap is about Rs. 16-8-0 per maund. The industry has much declined of late due to similar factories having been started at places nearer to Nepal.

IV.—Food grains.

1. The following table shows the area, production and prices of the principal crops of the district during the year 1921-22:—

Name of crop.	Area in acres.	Average yield in seers per acre.	Price per maund.	
			Rs a. p.	Rs. a. p.
Juar	4,341	450	3-0-0	to 4-0-0
Bajra	10,153	350	4-0-0	
Rice	154,311	55	5-0-0	to 24-0-0
Maize	92,316	425	4-0-0	
Arhar	1,649	400	3-6-0	to 3-8-0
Urd and mung	4,205	175	4-8-0	to 4-12-0
Moth	4,392	200	5-12-0	
Mandua	5,613	260	5-12-0	
Kodon	244	525	4-8-0	
Sawan	19,401	325	5-8-0	
Indigo	733	10	250-0-0	
Sugarcane	35,915	425	16-0-0	to 20-0-0
Til	107	150	8-0-0	to 9-0-0
Ground-nuts	13	800	11-0-0	
Sann	18,916	700	5-0-0	
Wheat	47,419	450	4-8-0	to 5-0-0
Barley	144,390	500	3-8-0	to 3-12-0
Gram	18,755	375	3-8-0	to 3-12-0
Peas	65,398	450	2-8-0	to 3-8-0
Masur	53	225	4-4-0	to 4-8-0
Linsced	630	250	9-2-0	to 9-8-0

2. *Flour milling industry.*—There are about 7 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 National Moslem Flour Mill of Raja Bazar has an oil engine of 13 H. P. and one chakki, grinding about 3 maunds of wheat per hour. One tin of kerosine oil is consumed in about 8 hours and about 6 annas worth of lubricating oil is required daily. Four men are employed at present. The driver is paid Rs. 40 per month and the other 3 men are paid at Rs. 12 to Rs. 15 per month each. The house rent is Rs. 7 per month and there is an income of Rs. 5 per day to the owner in this industry when his mill works all right, but this is seldom the case as there are many breakdowns also in the engine.

V.—Hardware.

(1) *Iron Foundry.*—There is one Iron Foundry in Shahganj town, where sugarcane crushing mills are mostly manufactured. The cupola is of one-fourth ton capacity and the blast is supplied by means of a hand fan. There are also four lathes and some smaller machines, all worked by hand.

The following is the staff on the muster roll with its wages :—

7 Blacksmiths at 10 annas to Re. 1-4 per day.

3 Founders at Rs. 1-8 to Rs. 2 per day.

10 Coolies getting 12 annas on casting days and 8 annas on other days.

Casting is done only once a week. About 50 maunds of pig iron is charged at a time for which about 25 maunds of coke is required and it takes about 10 hours for melting. Pig iron is obtained from Jamshedpur at Rs. 100 per ton and hard coke is obtained from Jharia at Rs. 45 per ton. About 40 tons of pig iron and about 18 tons of coke are consumed annually. Round bars of 2½" diameter are purchased from Calcutta at Rs. 9 per cwt. The factory works only for three months during the year, during the months of November, December and January, and remains idle for the rest of the time for want of work. In one season about 300 mills are manufactured. The price of a two roller mill without frame is Rs. 35. The factory does not put

up frames as the villagers can get them made more cheaply in their villages. The sale is both wholesale and retail. Villagers come from the neighbouring villages and make purchases personally. Sometimes some petty merchants also buy about 10 or 15 mills at a time and sell them to the villagers.

(2) *Outlery Works.*—Mariahu has a factory, working for the last six years, where penknives, table knives and small guptis are chiefly manufactured.

The following is the staff with its wages :—

6 Blacksmiths at	...	10 annas to Re. 1-4 per day.
4 Hammer-men at	...	Rs. 15 per month.
4 Fitters at	...	9 annas per day.
6 Kichwais at	...	Rs. 10 per month.
2 Bellows-men at	...	„ 7 to Rs. 9 per month.

Old and broken railway springs are purchased at about Rs. 12 per maund and old files are purchased from Calcutta at about Rs. 15 per maund. About 15 maunds of steel is required annually. Handles are made of shisham wood. About 3 dozen knives are manufactured daily and are sent to Calcutta where the owner has his own shop. The prices of knives range from Rs. 3 to Rs. 10 per dozen and the prices of guptis Rs. 45 per dozen. No power machines are used, and only hand-power is resorted to. The articles look decent and their prices also compare favourably with foreign or articles of other places. No advertisement is made and the proprietor states that he has difficulty in selling the articles, and hence does not manufacture on a larger scale.

(3) *Manufacture of silver ornaments.*—Baju (a kind of ornament worn on the arms) is manufactured at Rampur by 25 families from an alloy consisting of 75 per cent. silver and 25 per cent. zinc. There are several dealers in the town who advance money and materials to the workmen and get the articles manufactured for sale at their shops in the town. Wages are paid by piece at the rate of 3 annas to 4 annas per tola and a pair of bajus weighs about 16 tolas. A man can make a pair in about 2 days. The average earning of a man in this industry is about Rs. 1-8 per day. The present price of silver is

Rs. 85 per 100 tolas and that of zinc is Rs. 21 per maund. The ornament is sold at 15 annas to Re. 1 per tola. The articles are also exported to the neighbouring districts of Mirzapur, Benares and Allahabad by the wholesale dealers of those places.

VI.—Leather.

(i) Raw materials.

The slaughter-house figures show that the following numbers of animals were slaughtered during the year 1921-22 :—

Cows, bullocks and buffaloes	..	...	2,670
Calves	...	...	751
Sheep and goats	...	...	6,951

The total quantity of hides and skins thus available is roughly :—

Hides	...	...	742 maunds.
Skins	...	...	695 ..

Taking that about the same number of animals are slaughtered in the mufasil, it works out that the total quantity of hides and skins available from slaughtered animals is :—

Hides	...	...	1,484 maunds.
Skins	...	...	1,390 ..

The Agricultural Statistics of India, 1912-13, shows the cattle population during that year in the district as follows :—

Cows	...	...	137,847
Buffaloes	...	...	83,389
Bullocks	...	...	274,734
Young stock	...	...	192,283
Sheep	...	...	106,089
Goats	...	...	133,532

These figures are out of date now and they only give a very rough idea.

Taking that 2 per cent. of the cattle die every year besides those that are slaughtered, they yield the following :—

Hides	...	...	2,833 maunds.
Skins	...	...	450 ..

The total quantity of raw materials available in the district, thus, is :—

	Slaughtered.	Dead.	Total.
Hides ...	1,484	2,863	4,347 maunds.
Skins ...	1,390	480	1,870 „

Out of this total of 6,217 maunds of hides and skins it is estimated that only about 20 per cent. is consumed in the district and the rest, about 4,972 maunds, are exported annually from Jaunpur mostly to Cawnpore and Calcutta.

There are about a dozen dealers in hides and skins in large towns like Jaunpur, Zafarabad, Machhlisahr, Baragaon, etc., who purchase them in retail as they are brought by the villagers, and when a wagon load is thus collected, they are sent to Cawnpore or Calcutta and sold there through brokers.

(ii) *Tanning.*

Country Chamars do the ordinary tanning and are to be found near almost all big towns and villages like Shahganj, Zafarabad, etc. The process of tanning is the same old and crude one as is practised elsewhere on this side. It is described in great detail in Mr. Walton's Monograph on Leather and does not require to be repeated here. The price of a raw hide varies from Rs. 1-8 to Rs. 3 each, and that of raw skin 6 annas to 8 annas. A hide takes about 15 days to be tanned and a skin from 6 to 8 days. The census of 1911 has returned 334 persons as workers in hides and skins. This number is much less as compared with the figures of other districts, which means that only a portion of the hides and skins available in the district is tanned and utilized in the district. The earning of a tanner is about 8 annas a day.

(iii) *Manufacture of shoes.*

(a) *Indian pattern.*—Chamars who tan hides and skins also manufacture country shoes. For country shoes, bovine hides are used for uppers and buffalo hides for soles. Five to 6 pairs of shoes are made from one hide and a man can make a pair of shoes in about 2 days. The price of a pair of shoes is from 14 annas to Re. 1-4, and a man earns about 8 annas a day in this industry. The industry is on a very small scale and there are no exports of country shoes from Jaunpur, the consumption of this product

being wholly local. The census of 1911 has returned 450 persons as shoe, boot and sandal makers in the district, but this number also includes the manufacturers of shoes of English pattern.

(b) *English pattern*.—Locally tanned hides and skins are also used for the manufacture of English pattern shoes of inferior quality for which there is now-a-days a growing demand amongst the ordinary people. Tanned cow hides are used for uppers and buffalo hides for the soles. A man can make a pair in about 2 days and can earn from 10 annas to 12 annas a day. Besides the above, a certain quantity of good factory tanned leather is also imported from Cawnpore and other places for the manufacture of superior quality of boots and shoes of English pattern for which there is an increased demand due to the general rise in the prices of superior quality of imported foot-wear.

Suggestions for improvement.—I would suggest a small demonstration school to give a short course of training in improved methods of training. Some private capitalist should start a factory on a moderate scale for tanning and manufacturing leather goods in a suitable locality, preferably some where near Shahganj, where it could profitably utilise the surplus raw materials of Ballia and other adjacent districts as well. In my Ballia report I have shown a surplus of raw hides and skins, but as the district is lacking in the tanning materials, a large quantity of them is exported from there annually. Jaunpur has a number of babul trees, besides the district has many ravines and could easily have babul plantations. I have preferred Shahganj as it is situated near the boundary of three districts and has excellent railway facilities.

(iv) *Kuppi making*.

About a dozen families of a special caste of people known as Dabgars are engaged in the manufacture of kuppis or leather bottles used by the perfumers for selling scented oils in the town. Kuppis are made from dry as well as fresh hides or skins. Fairings and clippings are also used to some extent, but generally fresh hides are preferred as it is easier to make kuppis from them. The head portions of hides of the slaughtered animals are

purchased from the butchers at 10 annas to 12 annas per score pieces, and as these are full of holes, will not suit for any of the ordinary leather goods requiring whole pieces of leather. A man can make about 3 dozen of medium sized kuppis in a day and earn about 8 annas. Earthen moulds are used and are made by the Dabgars themselves.

Kuppis are made of 1 chatak to 10 seers capacity and the following are their present prices :—

	Rs.	a.	p.	
1 chatak capacity ...	0	3	0	per score.
2 chataks „ ...	0	4	0	„ „
$\frac{1}{2}$ seer „ ...	0	6	0	„ „
$\frac{1}{2}$ seer „ ...	1	4	0	„ „
1 seer „ ...	1	8	0	„ „
$2\frac{1}{2}$ seers „ ...	3	0	0	„ „
5 seers „ ...	5	0	0	„ „
10 seers „ ...	10	0	0	„ „

VII.—Miscellaneous.

(a) Firework making.

Jaunpur is known for its fireworks for a long time. It received patronage from the Muhammadan rulers. About a dozen families of Muhammadans are still engaged in Jaunpur town in the manufacture of fireworks, some of whom are much skilled in the art and have displayed their fireworks in other districts on several grand occasions such as the visit of His Royal Highness the Prince of Wales, Durbars, etc. The chief ingredients used in the manufacture of fireworks are sulphur, saltpetre and charcoal. Saltpetre and charcoal are of local manufacture and sulphur is imported which is also generally purchased locally, but is sometimes imported from Benares, Allahabad and other places. The average earning of a firework maker is estimated to be about Re. 1 a day, but when they have a large order in hand they earn many times more than this amount. They have a busy day in the marriage season. The following is a list

of some of the articles manufactured with their approximate prices :—

	Rs.	Rs.	a.	p.	
Chakkar Hazara...	...	15 to 20	0	0	each.
Bahatara Jaldar...	...	50	60	0	0
Motor cycle	20	30	0	0
Charkhi Hafrang	...	8	5	0	0
Charkhi Motimala	...	4	5	0	0
Charkhi Chattedar	...	4	5	0	0
Charkhi Fawaredar	...	4	5	0	0
Sun Light	4	5	0	0
Phatak Welcome	...	25	30	0	0
Chashma (running stream)	...	16	20	0	0
Azdaha	70	25	0	0
Chakkar Factory	...	10	15	0	0
Bagh Chaman	40	50	0	0
Rocket gajredar	1	2	0	0
Rocket (various colours)	...	1	2	0	0
Gola Asmani	3	4	0	0
Gola Makhidar	5	6	0	0
Gola Mahedar	4	5	0	0
Charkhi Parind	1	1	4	0
Darakht Phirozi...	...	1			each
Singar Har	10			
Taus	10			
Horse with rider	...	10			

(b) *Manufacture of smoking tobacco.*

About 50 families, both Hindus and Muhammadans of Jaunpur town, are engaged in manufacturing smoking tobacco. The tobacco largely in demand and used by villagers and menials is known as Karua and consists of tobacco leaf, reh and molasses.

The following are the proportions and prices :—

Tobacco leaf, 5 maunds	...	...	160	0	0
Reh, 35 maunds	...	...	8	12	0
Molasses, 10 maunds,	...	...	50	0	0
Total	...	...	218	12	0

Four men whose wages are 6 annas a day can make 50 maunds of this tobacco in about 4 or 5 days and it is sold at Rs. 4-8 per maund.

In better qualities the quantity of reh is less and spices and khamira are also added. Khamira is made by mixing molasses with fruits like plantains, pineapples, etc., and keeping the mixture in jars buried in the ground for several months. It is made locally by the tobaccoists themselves. Khamira can be stored, but it would not pay any capitalist to have a khamira shop unless he also manufactures tobacco for sale. The spices generally used are oils of kahu, laong, saunph, etc. For extra superior qualities ilachi and mushk are also used.

(c) *Manufacture of moonj string.*

About 150 persons, mostly in the villages of, Pilkicha, Sutaui, Rawatpur, Khanpur, Ungli, Udaipur Dipi, Tilwari, Barsatha, Terhwa, Ranipur, Krishnapur, Gaura, Gajinpur, Mendha and Jagdishpur in the tahsil of Shahganj, are engaged in the manufacture of moonj string. These people do this work only during leisure hours to supplement their earnings from agriculture. Moonj is purchased from the neighbouring district of Partabgarh and its present price is about 9 seers to a rupee. A man working the whole day can make $1\frac{1}{2}$ seers of string and it is sold at about 3 annas per seer. These people bring the string for sale in the village bazars on market days. Moonj is obtained during the months of November, December and January and the manufacturers purchase and stock their annual requirements during the season and carry on the work of making string throughout the year. Nearly all the string manufactured is sold locally and there are no exports in it.

(d) *Sann baling.*

There are four factories in Mariahu town and one in each of the villages of Etwa, Jamalapur, Rampur, Sukhlalganj and Barsathi for pressing sann and making bales for export. The exporters do their own work and they do not make bales for outsiders. The presses are of the screw type, handpower and cost, it is said, Rs. 500 each. Six men working on a press can make about 25 bundles of $2\frac{1}{2}$ maunds each in a day of 9 hours. Piece

wages are paid at the rate of annas 3 per bale. Sann is brought from the neighbouring villages like Sitalgaon, Newariah, Mahdiganj, Salimpur, etc. The chief season for obtaining sann is October and November. The district Jinswar shows the acreage under sann to be 18,916 and the average yield of sann per acre in the district is about 18 maunds; from this it works out that about 340,488 maunds of sann is produced annually and nearly the whole of it is exported in raw state chiefly to Calcutta. The average price of sann is Rs. 5 per maund.

The firms here enter into contracts with the exporting firms in Calcutta to supply a certain quantity of sann in the season. In order to be able to supply the contracted quantity, they have to purchase it at any rate at which it is available, with the result that its price goes on increasing towards the end of the season.

(e) *Indigo industry.*

Indigo planting and its manufacture was at one time a very flourishing industry in the district and there were several European firms engaged in it here, but since the introduction of the synthetic dye nearly all the factories have been closed and the industry is now conducted on a very small scale only by two landed magnates. During the agricultural year 1921-22, 773 acres of land was under indigo. The average yield of indigo per acre in the district is 19 pounds, and it is estimated that about 182 maunds of indigo is produced, in all, annually.

The seeds are sown in the month of March and the crop is ready by September. The plant is extracted with water in large masonry tanks. The water extract is oxidised by mechanical stirring in air and the deposited indigo of commerce is strained, squeezed and caked up. Most of the indigo is exported to Calcutta, where trade agents like Messrs. Thomas & Company, etc., settle the prices and sell the article. They charge 2 per cent. as their commission. A portion of the indigo is also sold to the dyers of Mau, Tanda, etc., who come personally to make purchases. The present price of indigo is about Rs. 250 per maund. Old indigo planters state that there is not much profit in this industry now and there are no chances of its revival.

(f) Papier mache industry.

About 1879, Mr. G. E. Ward, the Collector, had introduced the manufacture of papier mache by importing three craftsmen from Kashmir and starting a factory under their superintendence with a Government grant of Rs. 2,000. The industry had, at one time, achieved a considerable reputation, but of late years, however, the manufacture of papier mache has been abandoned, owing to the difficulty of procuring skilled artizans at reasonable rates.

(g) Jail industries.

The industries in the local jail are the manufacture of moonj mats, sutli, rope and mats of aloe fibre, hand-loom weaving, durrie weaving, wheat grinding and oil pressing.

Moonj mats.—Moonj is obtained from Kasganj at Rs. 3-8 per maund. One man makes 300 yards of kachcha ban or 10 seers of pukka ban in a day. A man can make 2' x 4' of matting in a day. Mats are only made to orders received, which are mostly local. Mats are sold at 12 annas per square yard and a square yard of matting weighs approximately 2½ seers.

Manufacture of sutli, ropes and mats of aloe fibres.—One man can pound 1 maund of green leaves in a day and it yields about 1½ seers of fibre. The fibre is sold at Rs. 10 per maund. One man makes about 300 yards of sutli which weighs about a seer and is sold at Rs. 16 per maund. One man can make 4' x 2' of plain matting in a day, and it is sold at Re. 1-4 per square yard. One square yard of matting weighs about 1½ seers. For the present they have a certain quantity of plants around the jail boundaries. When this is exhausted, aloe plants will be obtained from the boundaries along the railway line.

Hand-loom weaving.—Two looms of the fly-shuttle type are working at present. Yarn of no. 10 counts is purchased through the Director of Industries at Rs. 7-10 per 10 lbs. bundle. One man can weave about 30 feet of dosutee of 28" width in a day. The cloth is made mostly for jail use, but when sold, sells at 8 annas per yard. One yard of cloth weighs approximately 3½ chataks.

Durrie weaving.—There are no orders for durries at present on hand. Yarn of no. 10 counts is used for durrie weaving as well and a man can weave 2' × 2' of durrie in a day. Durrie is sold at Rs. 8-8 per seer and one seer of it measures approximately one square yard.

Carpet weaving.—Carpet weaving has been discontinued for the last one year as there is no demand for it.

Wheat grinding.—Twelve chakkis are working at present. Two men working on a chakki can grind 30 seers of wheat or 40 seers of gram in a day. This is for jail use.

Oil pressing.—Two ghanis are working at present. Two men work on a ghani. 3½ seers of mustard seed is charged at a time and in about 3 hours about 14 ohataks of oil is recovered. There are three such charges of a kolhu in a day. This is also for jail use.

VIII.—Oil Industries.

There is no power oil mill in the district and oil is extracted by means of ordinary country kolhus similar to those used in other parts of the provinces. The work of oil pressing is carried on in almost every village, but the industry is somewhat centralised in a group of about half a dozen villages like Rasulabad, Bhandari, Isapur, Shakar Mandvi, Mardapur, etc., all of which are situated near the town. About 80 families of telis are engaged in the industry in these centres. Sarson and barre seeds are mostly crushed. The seeds are purchased from the market where some of the richer members of the teli families have their shops for the sale of oil-seeds. The present price of sarson is Rs. 6-10-8 per maund and that of barre is Rs. 4-2-8 per maund. Barre seeds are first removed of their outer shells before being pressed and 8 seers of barre seeds yield about 3 to 4 seers of clean seeds according to their quality. The yield of oil from the cleaned barre seeds is about 40 per cent, and that from sarson is about 33 per cent. One charge of the kolhu is of about 3½ seers of sarson or about 6 seers of barre seeds. There are generally four charges of the kolhu in a day. The oil is partly sold for local consumption, but a greater portion of it is exported to Benares, Gorakhpur, Chupra, Ballia

and to most of the large towns of Bihar from where purchasers come personally to make purchases. The present price of sarson oil is about Rs. 23 per maund and that of barre is about Rs. 21 per maund. The present price of sarson oil-cake is about Rs 3-8 per maund and that of barre oil-cake is about Rs. 3 per maund. The oil-cake is fed to bullocks locally and is also exported to Benares. The price of a country kolhu ranges from Rs. 10 to Rs. 25 and that of a bullock from Rs. 25 to Rs. 50. The cost of keeping a bullock is from 6 annas to 10 annas per day.

			Rs	s.	p.
Price of 14 seers of sarson seed	...	...	2	5	4
" " 4½ seers of sarson oil (Rs. 2-10-8)	...	...	3	7	8
" " 9½ seers of oil-cake (Rs. 0-13-0)	...	...	

As this quantity is pressed in a day, the gross earning of the teli works out to Re. 1-2-4, from this taking out 8 annas as the cost of keeping a bullock, his net earning is about Re. 0-10-4 per day. Ordinarily a village teli does not have to spend anything on the upkeep of the bullock during the greater portion of the year, as he cuts grass or a member of his family does it for him. This costs him nothing.

The earning of a teli would have been more than this if he could store the oil-seeds 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 purchase, which are usually higher than the season rates.

The district is exporting a large quantity of oil-seeds every year. The exact quantity of it could not be ascertained, but it is estimated that the approximate quantity is about 16,000 maunds annually.

IX.—Perfumery.

There are about 60 factories (large and small) here for the manufacture of scented oils, etc. The articles generally manufactured are oils and itra of chameli, bela and keora and keora water. It is estimated that about 500 maunds of chameli, 1,000

maunds of bela and about 500 maunds of keora flowers are produced annually from the fields which are situated near the town. The following acreages have been returned under the different flowers during the year 1921-22:—

Bela	...	...	...	...	64 acres.
Chameli	...	...	...	...	62 ..
Keora	...	...	...	...	31 ..

Bela flowers are obtained during the months of April to July, chameli flowers during the months of October and November, and keora flowers during the months of September and October. The average price of chameli flowers is Rs. 50, of bela Rs. 20 and of keora Rs. 25 per maund. Til is imported mostly from Chandausi, Amroha, Sutna, Karwi, etc., and its present price is from Rs. 20 to Rs. 25 per maund, but in season, i.e., in the month of December, it is obtained at about Rs. 15 per maund, and it is then only that large dealers buy their yearly requirements of til. The process of manufacture is the same as is carried on at Ghasipur, Kanauj and other places. The stills used are of the same old and inefficient type.

The larger manufacturers advance money to the telis who keep kolhus and bullocks and press oil-seeds at the rate of 3 maunds of til for a rupee plus the oil-cake. The latter is fed to bullocks and sometimes also sold. The present rate is about Rs. 5 per maund.

	Rs.	a.	p.
Wages for crushing 3 maunds of til is	...	1	0 0
Plus price of 1½ maund of oil-cake	...	7	8 0
		<hr/>	
Total	...	8	8 0
		<hr/>	

As it takes about 8½ days for a teli to crush 3 maunds of til, his average gross earning works out to about a rupee a day, and taking the cost of keeping a bullock to be 8 annas a day, his net earning is about 8 annas per day.

The following are some of the present prices of scented oils, etc. :—

	Rs.	Rs.
Chameli oil ...	... 2 to 8	per seer.
Bela oil ...	... 2 to 8	„ „
Keora oil ...	... 2 to 6	„ „
Masala oil ...	... 2 to 5	„ „
Chameli itr ...	... 2 to 4	„ tola.
Bela itr ...	... 2 to 5	„ „
Keora itr ...	... 2 to 10	„ „
Masala itr ...	... 2 to 7	„ „
Keora water	1 to 4	per quart bottle.

Bela oil is used by most of the Calcutta Kavirajes as a base for their medicated hair oils. A portion of the articles is sold by advertisement, but their fixed customers are petty shopkeepers of the towns of Bengal and Bihar who buy the articles at wholesale rates for sale at their shops. These people consume the bulk of the produce of Jaunpur.

X.—Pottery and Glass.

Glass.—Crude glass was at one time manufactured in several places in the district for the manufacture of bangles, but the industry has now been practically abandoned. It is not very paying these days on account of the keen competition with other districts where it is carried on on a large scale.

At present there is only one man named Mowla Buksh in mohalla Razwi Khan who manufactures crude glass jars or karabas used by perfumers to keep keora water. Glass is purchased at Rs. 4 to Rs. 8 per maund according to its quality from the Churiharas in villages Janghai, Jogapur, Champapur, Nandaul, Ramapur, Gaura, Silaudhi, Sikandara, Hasanpur, Rakhauli, Buragaon, Bankath, Samadganj, Nargunnah, Barsathi, Damodra and Phulpur in the districts of Mirzapur, Allahabad and Partabgarh. The glass is remelted and is further refined for the manufacture of karabas. The process* 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 8 maunds of firewood which sells at

* See Report on the Industrial Survey of the Benares district, pages 85 and 86.

Rs. 1 per maund. One karaba requires about a séer of glass. The present price of a karaba is 9 annas. Two more men are required as assistants and are paid at 12 annas per day. The work is done only for three months during the year, i.e., during the keera season.

Pottery.—The pottery of the district is also of not much note, but that of village Rampur in Mariahu tahsil is somewhat of superior quality, where there are about eight families of potters manufacturing articles of ordinary country requirements. The clay used is obtained from the neighbouring tank for which nothing has to be paid as royalty to the zamindar excepting his requirements of pottery free of charge. The average earning of a potter is about 6 annas per day.

XI.—Textiles.

1. *Spinning and weaving.*

(a) *Hand-loom weaving.*—There is no power mill in the district, but hand-loom weaving is practised in almost all large towns and villages. Jaunpur seems to be the only district in this division where the old type of loom (throw-shuttle loom) is still largely used. Though the outturn of these looms is very low, the weavers do not wish to adopt the fly-shuttle looms simply because they do not know how to use them. The industry is centralised in several villages like Mariahu, Macbhlishahr, Zafarabad, Kajgaon, etc., where there are 30 or 40 families of weavers in one place. The yarn used is mostly from the Cawnpore mills. Yarns of different counts are used in different places according to the kind of cloth largely in demand in the particular locality. Yarn from no. 10 counts to no. 16½ counts is mostly used. The following are some of the present prices of yarn :—

10 counts	Rs. 7-8	per 10 lbs. bundle.
13	" "	8-12 " "
13½	" "	9-2 " "
16	" "	9-13 " "
16½	" "	10-8 " "

A weaver can weave about 6 yards of cloth of 36" width and the price of a piece of 12 yards × 36" is Rs. 4-12 to Rs. 7 according to its quality. For weaving a piece of 12 yards × 36"

about $1\frac{1}{2}$ to $1\frac{3}{4}$ seers of yarn is required according to the quality of the cloth. The average earning of a weaver is about 8 annas a day. The whole of the cloth is sold locally in the market, and at big centres like Mariahu some traders also come from the neighbouring villages such as Churari, Kajgaon, Zafarabad, Phulpur, Jalalpur, etc., on market days to make wholesale purchases of from 25 to 50 pieces each. A small quantity of hand spun yarn is also available in the town markets. Its present price is Rs. 1-12 to Rs. 2 per seer, but there is not much demand for it and the quality is much inferior as compared with the high prices. The census return shows that there were 4,748 persons in the year 1911 engaged in cotton spinning, sizing and weaving in the district, but these figures seem to be quite out of date now and do not correctly indicate the present condition of the industry. At any rate it is estimated that the total number of looms in the district is over 600, out of which about 50 are of the fly-shuttle type and the rest are all throw-shuttle. About 3,500 maunds of yarn is consumed annually.

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 the 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., a certain rate per yard of cloth.

(b) *Carpet weaving.*—The condition of the industry is just the same as that prevailing in Mirzapur. In fact the villages are in continuation of those of the Mirzapur district. There are about 200 families of carpet weavers in the tahsil of Mariahu, mostly in Mariahu town and in the villages of Gopalapur, Sarai Dib, Newada, Sukhlalganj, Pariat, Rampur, Jamalapur and other smaller villages bordering the town of Bhadohi in the Benares State which is the chief centre of this trade. The

weavers take their carpets to Bhadohi where there are about half a dozen dealers who buy them for export to foreign countries, mostly England. The weavers use their own yarn and dyes, and it is only in the case of special qualities that firms like that of Messrs. A. Tellery & Co. of Bhadohi supply their superior quality of mill yarn after it has been dyed in their factory.

In an average quality of carpet the proportion of cotton and wool is as 2 : 1. The price of woollen yarn of Jhansi is Rs. 60 to Rs. 75 per maund and cotton yarn of 6½ counts is obtained at about Rs. 7-8-0 per 10 lbs. bundle. A weaver can weave ½ to 2 square feet of carpet in a day. The prices vary according to their demand in foreign markets. Aniline dyes are mostly used. The average earning of a weaver is about 8 annas a day and boys earn about 4 annas a day. The weavers have earned a deal during the recent years.

2. *Dyeing and printing.*

Dyers and ohhipis ply their trade in most of the large towns and villages like Mariahu, Machhlishahr, Badshahpur, Sujanganj, etc. The articles generally printed are lihafs, toshaks, etc. These people print to order only on the customer supplying his cloth. The colours used are mostly aniline and are said to be fast, but a little defect in the colours does not matter to the buying public which uses these prints only after stuffing them with cotton. The prints have not to stand frequent washing. The cloth for printing is obtained from the local markets. The charges for printing range from 12 annas to Rs. 1-12-0 per piece. A man can print a lihaf in two days. The average earning of a man ranges from 8 annas to 10 annas per day.

The Machhlishahr ohhipis also print zaris and dupattas with pupri (alizarine) which sells at about Rs. 5 per seer. Gum and water are added to it to form a paste, and the material after being printed when exposed to sun turns into deep black. The charge for this kind of printing is about 2 annas per yard.

XII.—Wood industry.

There is no industry in wooden articles in the district except that somewhere carpenters work in almost every village and help in the manufacture and repair of agricultural implements.

CHAPTER III.

Suggestions for the improvements of the various district industries.

1. *Leather industry.*—A demonstration school to teach improved and simpler methods of tanning should be started. A private capitalist should establish a factory on a moderate scale for tanning and manufacturing leather goods in a suitable locality, preferably somewhere near Shahganj, in order to profitably utilise the surplus raw materials not only of this district but also those of Ballia and other adjacent districts. My reasons for this are given in chapter on leather.

2. *Sann hemp.*—A small factory should be started using improved tools and machinery for the manufacture of twine, strings and ropes out of the raw materials, so much of which is at present sent out. A small demonstration school to teach better methods of extracting sann fibres, spinning and tat-weaving on suitable hand machines seems necessary.

3. *Oil industry.*—A small oil mill will find enough of raw materials and a market for the sale of the produce will not have to be found out as mill oil will certainly be cheaper than kolhu oil and will have a ready sale.

4. *Perfumery.*—A small demonstration school equipped with modern stills and other appliances will do a great deal in the manufacture of superior quality of articles which will very much improve the condition of the industry.

5. *Carpet weaving.*—If a school, as has already been suggested for the carpet weavers of Mirzapur, be started there, such of the carpet weavers of Jaunpur as may be willing to take advantage of the training given there should be given every facility and encouragement to learn work in it.

CHAPTER IV.

STATISTICS.

I.—Naicha making.

1. *Raw materials*—*Import.*

- (a) *Quantity*.—About 10,000 reeds and about 6 seers of kalabatun.
- (b) *Place of origin*.—Reeds from Pilibhit and kalabatun from Benares.
- (c) *Value*.—Reeds worth about Rs. 800 and kalabatun worth Rs. 200.

Export.

- (a) *Quantity*.—About 5,000 naichas.
 - (b) *Place of consignment*.—In the town and the surrounding villages and to some extent to the neighbouring districts.
 - (c) *Value*.—About Rs. 5,000.
2. *Manufacture*—Household industry.
- (a) *Number of persons employed*.—About 25 persons.
 - (b) *Wages and system of payment*.—No outside persons are employed. The earning of a man is about 8 annas a day.
 - (c) *Output*.—About 5,000 naichas.
 - (d) *Marketing system*.—Customers come and buy personally.
 - (e) *Profit*.—About 25 per cent.
 - (f) *Suggestions*.—The better class of work should be displayed at railway stations, etc.

II.—Building stone and chakkis for grinding purposes.

1. *Raw materials*—*Import.*

- (a) *Quantity*.—About 25,000 cubic feet.

(b) *Place of origin.*—From Karwi, Bahilpurwa, Shankargarh, Mirzapur, Chunar and Dagmaipur.

(c) *Value.*—About Rs. 20,850.

Export.

(a) *Quantity.*—About 500 chakkis.

(b) *Place of consignment.*—To the neighbouring villages.

(c) *Value.*—About Rs. 7,900.

2. *Manufacture*—Household industry.

(a) *Number of persons employed.*—About 20.

(b) *Wages and system of payment.*—Daily wages ranging from 12 annas to Re. 1-4 per day.

(c) *Outturn.*—About 500 chakkis.

(d) *Marketing system.*—Customers come and buy personally.

(e) *Profit.*—About 20 per cent.

III.—Saltpetre refining.

1. *Raw materials*—

Import.

(a) *Quantity.*—About 2,750 maunds of crude saltpetre.

(b) *Place of origin.*—From the villages of Mariahu, Lalganj, Machhlisahar, Rampur, etc.

(c) *Value.*—About Rs. 11,000.

Export.

(a) *Quantity.*—About 1,210 maunds of refined saltpetre.

(b) *Place of consignment.*—To Calcutta.

(c) *Value.*—About Rs. 12,100.

2. *Manufacture*—Household industry.

(a) *Number of persons employed.*—About 6 persons.

(b) *Wages and system of payment.*—Monthly system, ranging from Rs. 16 to Rs. 20 per month.*

(c) *Outturn.*—About 1,210 maunds of refined saltpetre.

(d) *Marketing system.*—All the saltpetre is sent to Calcutta and sold there through brokers.

(e) *Profit.*—About 10 per cent.

IV.—Soap industry at Badshahpur.

1. *Raw materials*.—Oil, reh and kankar.

Import.

- (a) *Quantity*.—About 300 maunds of mahua and neem oil, about 900 maunds of reh and about 120 tons of kankar.
- (b) *Place of origin*.—Oil from village Ismailganj, reh from villages Nargunnab, Buragaon and Hema-ka-pura and kankar from Partabgarh.
- (c) *Value*.—Oils worth Rs. 4,500, reh worth Rs. 180 and kankar worth Rs. 432.

Export.

- (a) *Quantity*.—About 600 maunds of soap.
 - (b) *Place of consignment*.—To Nepal.
 - (c) *Value*.—About Rs. 9,900.
2. *Manufacture*.—Household industry.
- (a) *Number of persons employed*.—About 7 persons.
 - (b) *Wages and system of payment*.—Daily wages at 4 annas a day.
 - (c) *Output*.—About 600 maunds of soap.
 - (d) *Marketing system*.—The factories have fixed customers
 - (e) *Profit*.—About 12 per cent.

V.—Iron Foundry at Shahganj.

Owner :—HAFIZ MOHAMMAD YAQUB.

1. *Raw materials*—

Import.

- (a) *Quantity*.—About 40 tons of pig iron and 18 tons of hard coke.
- (b) *Place of origin*.—Pig iron from Jamshedpur and hard coke from Jharra.
- (c) *Value*.—About Rs. 4,810.

Export.

- (a) *Quantity*.—About 800 sugarcane crushing mills.
 - (b) *Place of consignment*.—To the neighbouring villages.
 - (c) *Value*.—About Rs. 10,500.
2. *Manufacture*.—On a small factory basis.
- (a) *Working capital*.—About Rs. 10,000.

- (b) *Labour*.—Available locally.
1. *Number of persons employed*.—About 20 persons.
 2. *Wages and system of payment*.—Daily wages ranging from 10 annas to Rs. 2 per day.
- (c) *Total outturn*.—About 300 mills.
- (d) *Profit*.—About 15 per cent.
- (e) *Marketing system*.—Customers come and buy personally.
- (f) *Suggestions*.—It has been suggested to the owner that he had better set up an oil engine and start some other side industry along with it of such a nature which would make the work run continually from the beginning to the end of the year.
- (g) *Mechanical appliances*.—A cupola of $\frac{1}{2}$ ton capacity, 4 lathes and some smaller machines, all worked by hand.

VI.—Cutlery Work at Mariahu.

Owner—R. K. NABI BUKSH.

1. *Raw materials*—

Import.

- (a) *Quantity*.—About 15 maunds of old steel.
- (b) *Place of origin*.—Moghal Sarai and Calcutta.
- (c) *Value*.—About Rs. 200.

Export.

- (a) *Quantity*.—About 80 gross of knives.
- (b) *Place of consignment*.—Calcutta.
- (c) *Value*.—About Rs. 9,600.

2. *Manufacture*.—On a small factory basis.

- (a) *Working capital*.—About Rs. 5,000.
- (b) *Labour*.—Available locally.
 - (1) *Number of persons employed*.—About 25 persons.
 - (2) *Wages and system of payment*.—Both monthly and daily. Blacksmiths at 10 annas to Re. 1-4 per day; hammer-men at Rs. 15 per month; fitters at 9 annas per day; khichwais at Rs. 10 per month; bellows-men at Rs. 7 to Rs. 9 per month.
- (c) *Total outturn*.—About 80 gross knives.

- (d) *Profit*.—About 15 per cent.
- (e) *Marketing system*.—The owner has a shop in Calcutta for the sale of the manufactured articles.
- (f) *Suggestions*.—Advertisement should be resorted to.
- (g) *Mechanical appliances*.—Ordinary hand grinding and polishing machines.

VII.—Silver ornaments of Rampur.

1. *Raw materials*—

Import.

- (a) *Quantity*.—About 16 maunds of silver and 6 maunds of zinc.
- (b) *Place of origin*.—From Calcutta, Allahabad and Benares.
- (c) *Value*.—Silver worth Rs. 44,030 and zinc worth Rs. 120.

Export.

- (a) *Quantity*.—About 4,320 pairs of bajus.
- (b) *Place of consignment*.—To the neighbouring villages as well as to Mirzapur, Benares and Allahabad.
- (c) *Value*.—About Rs. 69,120.

2. *Manufacture*.—Household industry.

- (a) *Number of persons employed*.—About 40 persons.
- (b) *Wages and system of payment*.—Piece system, at the rate of 3 annas to 4 annas per tola.
- (c) *Outturn*.—About 20 maunds annually.
- (d) *Marketing system*.—Customers come and buy personally.
- (e) *Profit*.—About 5 per cent.

VIII.—Oil pressing.

1. *Raw materials*—

Import.

- (a) *Quantity*.—About 25,200 maunds of barre seeds and about 1,260 maunds of sarson.
- (b) *Place of origin*.—From the neighbouring villages.
- (c) *Value*.—About Rs. 1,08,360.

Export.

- (a) *Quantity.*—About 4,000 maunds of oil from the pressing centres and about 16,000 maunds of oil-seeds from the district in general.
- (b) *Place of consignment.*—Oil to Benares, Gorakhpur, Chupra, Ballia and most of the larger towns of Bihar and oil-seeds to Cawnpore and Calcutta.
- (c) *Value.*—Oil worth Rs. 75,680 and oil-seeds worth about Rs. 66,174.
2. *Manufacture.*—Household industry.
- (a) *Number of persons employed.*—About 200 persons.
- (b) *Wages and system of payment.*—No wages are paid as no outsiders are employed, the members of the family do the work and the earning of a teli family is about 10 annas 4 pies a day.
- (c) *Output.*—About 5,455 maunds of oil.
- (d) *Marketing system.*—Customers come and buy personally.
- (e) *Profit.*—About 5 per cent.
- (f) *Suggestions.*—The telis of the important centres of the industry would be well advised to join together on co-operative system, which will help them in the joint purchase of their raw materials and the joint sale of their finished products.

IX.—Perfumery.

1. *Raw materials*—*Import.*

- (a) *Quantity.*—About 3,500 maunds of til.
- (b) *Place of origin.*—From Chandausi, Amroha, Sutna, Karwi, etc.
- (c) *Value.*—About Rs. 55,000.

Export.

- (a) *Quantity.*—About 1,000 maunds of scented oils, 10 maunds of itr and about 200 maunds of keora water.

- (b) *Place of consignment.*—To Calcutta and almost all large towns of Bengal and Bihar and a portion to other districts of these provinces as well.
- (c) *Value.*—About Rs. 1,25,000.
2. *Manufacture.*—On a small factory basis.
- (a) *Working capital.*—From Rs. 500 to Rs. 5,000.
- (b) *Labour.*—Available locally.
- (1) *Number of persons employed.*—From 5 to 20 persons in each factory.
- (2) *Wages and system of payment.*—Daily wages ranging from 6 annas to 8 annas per day. Telis are paid by piece which works out to about 8 annas per day. For details see description on perfumery industry.
- (c) *Total outturn.*—About 1,250 maunds of scented oils, 12 maunds of itr and about 250 maunds of keora water.
- (d) *Profit.*—About 20 per cent.
- (e) *Marketing system.*—There are fixed customers and advertisement is also resorted to to some extent.
- (f) *Mechanical appliances.*—No other mechanical appliances except the ordinary stills, etc., are used.

X.—Carpet weaving.

1. *Raw materials*—

Import.

- (a) *Quantity.*—About 90 maunds of woollen yarn.
- (b) *Place of origin.*—Agra, Cawnpore, Bundelkhand, Jhansi and the Punjab.
- (c) *Value.*—About Rs. 6,300.

Export.

- (a) *Quantity.*—About 300 maunds of carpet.
- (b) *Place of consignment.*—To Bhadohi and thence to Calcutta for shipment.
- (c) *Value.*—About Rs. 65,000.
2. *Manufacture.*—Household industry.
- (a) *Number of persons employed.*—About 200 persons.

- (b) *Wages and system of payment.*—By piece which comes to about 8 annas per day for adults and 4 annas per day for boys.
- (c) *Outturn.*—About 550 maunds of carpet.
- (d) *Marketing system.*—Some firms of Bhadohi have their agents in London, but goods are also sold on orders received from there direct.
- (e) *Profit.*—About 15 per cent.

CHAPTER V.

DIRECTORY.

1. *List of naicha makers.*

1. Abdul Jabbar, Cheharsu.
2. Ghafur Mian, "
3. Mahamdu, "
4. Nakched, "
5. Haji Rajjab, "
6. Najabat Mian, "
7. Malamat Mian, "
8. Chote Khan "
9. Iddu, "
10. Yaqub, "
11. Illan, "

2. *List of timber merchants.*

1. Nandan Barahai, Mandi Naseer Khan.
2. Besheshar Barahai, "
3. Bishwanath Lohar, "
4. Bhajan Kewat, "
5. Azis-ul-Rahman, "
6. Nandan Kewat, Narangi Bagh.

3. *List of stone merchants.*

1. Shah Muhammad, Kerakot.
 2. Ram Charan, "
 3. Qudrat Ullah, Kaseri Bazar.
 4. Sheikh, Raja Bazar.
 5. Abdul Wahid, Cheharsu.
 6. Abdul Khalik, "
 7. Shamsuddin Imamuddin, Beshirganj.
4. *List of soap manufacturers at Badshahpur.*

1. Muhammad Ibrahim,
2. Abdul Haq Islam.

5. *List of owners of brick kilns.*

1. Babu Narsingh Das, Ram Bagh.
2. Babu Murli Dhar, Keshopur.
3. " " " Moradganj.
4. Jai Narayan Singh, Bindraban.
5. Sitaram, Isampur.
6. Ram Dhir Singh, Nathupur.
7. Muhammad Husain, Ahmadpur.

6. *List of Refiners of Saltpetre.*

1. Babu Murli Dhar, Ram Bagh.
 2. Pheru Lonia, Shāhganj.
 3. Gopi Lonia " "
 4. Mangroo Lonia, " "
 5. Ram Lal Lonia, Suitha Kalan.
 6. Meghwa Lonia, Chatain.
 7. Rekhai Lonia, Dih.
 8. Sahtu Lonia, " "
 9. Bhagelu Lonia, Pura.
 10. Bansi Lonia, Sari.
 11. Musammat Dasi, Sari.
 12. Sobha Lonia, Arsia.
 13. Sukh Lal Lonia, Kheta Sarai.
 14. Tengru Lonia, " "
 15. Saheb Din Lonia, " "
 16. Kariawa Lonia, Baraut.
 17. Ganga Din Lonia, Takhe.
 18. Raghunath Lonia, Sabrahat.
7. *List of exporters of and dealers in hides and skins.*
1. Haji Bakridu, Zafarabad.
 2. Sindhu Butcher, " "
 3. Muhammad Tahir Ghulam Rasul, Buragaon.
 4. Bhojan Chiraghan, " "
 5. Sumbul Butcher, " "
 6. Hazi Iddu, Kotwali, Machhlishahr.
 7. Bideshi, " "
 8. Rajjab, Baolipar, " "
 9. Papar Chamar, " "

8. *List of manufacturers of fire-works.*

1. Sher Ali, Zer Masjid Kalan.
2. Ramzan, Rauza Arzan.
3. Rafiq, Urdu Mahallah.
4. Shakur, Katghara.
5. Ghausan, Tar Tale.

9. *List of manufacturers of moonj string.*

1. Bachha Mallah, Pilkicha.
2. Budhia, "
3. Baohu, Rawatpur.
4. Balai, "
5. Bechu Das, "
6. Guloki, "
7. Jhagru, "
8. Bideshi, "
9. Sahtu, "
10. Bhajan, Barsara.
11. Sunder, "
12. Jai Mangal, "
13. Baran, "
14. Saran, "
15. Antu, "
16. Jhaga, "
17. Aotar, "
18. Jai Karan, Sutaui.
19. Pheku, "
20. Ram Phal, Tilwari.
21. Bindu, "
22. Sheo Mangal, "
23. Khunni, Ranipur.
24. Narayan, "
25. Darsan, "
26. Nohar, "
27. Balraj, Udaipur.
28. Ghurhu, Mendha.
29. Khunni, "

30. Chauthi, Meddha.
31. Rajpal, "
32. Jageshwar, "
33. Manhgu, "
34. Sugar, "
35. Sumai, "
36. Sukhraj, "
37. Mohan Lal, "
38. Jagrup, Jagdishpur.
39. Bharos, "
40. Mulai, "
41. Jeautia, "

10. *List of owners of sann-baling presses.*

1. Sheo Dayal Ramji Das, Mariahu.
2. Kalika Ram, "
3. Suraj Mal Nagar Mal, "
4. Bhagat Ram Gobind Ram, "

11. *List of flour mills.*

1. The National Moslem Flour Mills, Raja Bazar.
2. Rahmania Flour Mill, Baluaghat.
3. Abdul Sattar Mohammad Ahya, Station Road.
4. Rukmanand Marwari, Laftinganj.
5. Wali Mohammad Flour Mills, Pokhta Sarai.

12. *List of manufacturers of scented oils, etc.*

1. Messrs. Sajjad Hussain Abdul Karim. Razwi Khan.
2. " Ghulam Ali Jawad Ali, Baluaghat.
3. " Fazzad Husain Mazhar Hussain, Baluaghat.
4. " Chote Lal Sarju Prasad, Imambara.
5. " Antu Ram Dukhi Ram, Razwi Khan.
6. Mohammad Abbas, Mulla Tola.
7. The Dharma Company, Bara.
8. Bashir Ahmad, Baluaghat.

13. *List of potters.*

1. Jag Narayan, Kumbar, Rampur.
2. Dangan, " "
3. Gajadhar, " "
4. Behari, " "

5. Kanta, Kumhar, Rampur.
6. Sukhu, " "
7. Lokai, " "
8. Maubgoo, " "
9. Raghubir, " "

14. *List of hand-loom weavers.*

1. Abdul Rahman, Raja Bazar, Jauupur.
2. Bishun Chandra, Masjid Tale, "
3. Mikki, Raja Bazar, "
4. Hari Mohan Sen, Bhandari, "
5. Mohammad Shakur, Chowk, "
6. Ganpat Sahai, Urdu Mahallah, "
7. Mohammad Ghafur, Bhandari, "
8. Mohammad Hussain, Raja Bazar, "
9. Bind Basni, Chowk, "
10. Satya Narayan, " "
11. Shree Ram, Line Bazar, "
12. Ambika Saran Singh, Mac, Kirakat.
13. Saffa, Buragaon, Shahganj.
14. Saheb Din, " "
15. Hasai, " "
16. Ghulaman, " "
17. Ghure, " "
18. Habib, " "
19. Karamat, " "
20. Buksb, " "
21. Muradi, " "
22. Budhai, Mariahu.
23. Mangal, " "
24. Qurban, " "
25. Aziz, " "
26. Shahmat, " "
27. Sultan, " "
28. Mahbub, " "
29. Deena, " "
30. Chotai, " "
31. Rajjab, " "

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32. Nazeer Ahmad, Mariahu.
 33. Lal Mohammad " "
 34. Kallu, " "
 35. Karim Bakhsb, " "
 36. Hillal, " "
 37. Mangal, Mahtawan, Machhlishahr.
 38. Mohammad, " "
 39. Sugan, " "
 40. Babullah, " "
 41. Din Mohammad, " "
 42. Azim, Saidwara, " "
 43. Mowla, Khanzada, " "
 44. Abdul, Baolipar, " "
 45. Ghafur, " "
 46. Qadir, " "
 47. Megha, " "
 48. Katwaru, " "
 49. Baqar, " "
 50. Sulai, " "
 51. Mitthu, " "
 52. Abdul, Albiana, " "
 53. Baqar, " "
 54. Bechai, " "
 55. Manhgu, " "
 56. Kulleh, " "
 57. Subhan, " "
 58. Sabboo, " "
 59. Hasan, " "
 60. Mahamdi, " "
 61. Kallu, Badshahpur, " "
 62. Habib, " "
 63. Qasim, " "
 64. Abdulla, Sepah, Badshahpur, Machhlishahr.
 65. Lal Muhammad, Sepah, Badshahpur, ..
 66. Ramzan, " " "
 67. Shakur, " " "
 68. Umar, " " "
 69. Subhan, " " "

15. *List of carpet dealers at Bhadohi.*

1. Messrs. A. Tellery & Co., Bhadohi.
2. Abdul Samad, "
3. Haji Idris, "
4. Balmakund, "
5. V. G. Sao, "
6. Mowlana Mian, "

16. *List of carpet weavers.*

1. Sharif, Mariahu.
2. Ali Buksh, "
3. Fahim, "
4. Mowla, "
5. Abdullah, "
6. Hillal, "
7. Yaqub, "
8. Muhammad, Gopalapur, Mariahu.
9. Abdul Jabbar, " "
10. Qadir, " "
11. Sahebali, " "
12. Nadir, " "
13. Usman, " "
14. Mahdi, " "
15. Karamat, " "
16. Billal, " "
17. Arman, " "
18. Shubrati, Newada, "
19. Usman, " "
20. Moiuuddin, " "
21. Ibrahim, " "
22. Mowla, Sukhlalganj, "
23. Muhammad, " "
24. Abdul Razzak, " "
25. Akbar, " "
26. Farid, " "
27. Din Muhammad, "
28. Ebrahim, Jamalapur, "

29. Siddiq, Jamalapur, Mariahu.
30. Zahur Ahmad, Pariat „
31. Hafiz Nadir, „ „
32. Khaddar, „ „
33. Abdulla, „ „
34. Jahán, „ „

17. *List of cloth printers.*

1. Makhdum, Rangrez, Mariahu.
2. Iddu Chipigar, „
3. Noor Buksh, Rampur, „
4. Shakur, Chowhatta, Machhlishahr,
5. Yusuf, Koerana, „
6. Shakur, Mahatwana, „
7. Yusuf, Sujanganj, „
8. Qadir, „ „
9. Abdulla, „ „
10. Fazal, „ „
11. Ali Buksh, „ „
12. Zahur Muhammad, Badshahpur, Machhlishahr.
13. Ali Buksh, „ „
14. Wazir, „ „
15. Amir, „ „

18. *List of tobacco manufacturers.*

1. Haji Khiru, Sutehti, Jaunpur.
2. Haji Piru, Sagaya Bazar, „
3. Muhammad Salim, Atala Masjid, Jaunpur.
4. Sulaiman Wali Muhammad, Atala Masjid, Jaunpur.
5. Bala Din Teli, Sutehti, „
6. Bihar Baijnath Teli, Sutehti, „
7. Budhu Bhikhu, „ „
8. Bhagwan Das Kandu, „ „
9. Baldeo Ahir, „ „

19. *Manufacturer of crude glass jars (karubas).*

1. Mowla Buksh, Razwi Khan, Jaunpur.

20. *List of kuppi makers.*

1. Tola Dabgar, Madar Mahallah, Jaunpur.
2. Hanuman Dabgar,

-
3. Bechu Dabgar, Madar Mahallah, Jaunpur.
 4. Shankar Dabgar, " "
 5. Mahadeo, Dabgar, " "
 6. Doman Dabgar, " "
 7. Umrao Dabgar, " "
 8. Jeolal Dabgar, " "
 9. Bansi Dabgar, " "
 10. Lachman Dabgar, " "
 11. Dip Chand, " "
 21. *Owner of Cutlery Works, Mariahu.*
R. K. Nabi Buksh, Mariahu.
 22. *Owner of Iron Foundry, Shahganj.*
Hafiz Muhammad Yaqub, Shahganj.
 23. *List of telis.*

1. Dukhi, Mahari Tola, Jaunpur.
2. Bhaggal, " "
3. Mahabir, " "
4. Ram Dhan, Tar Tale, "
5. Ghure, " "
6. Ram Lal, " "
7. Sadar, " "
8. Badal, " "
9. Dia Dayal, Shakar Mandvi, Jaunpur.
10. Dwarika, " "
11. Ram Das, " "
12. Gopi Shyam Lal, " "
13. Musai, " "
14. Madho, " "
15. Jai Mangal " "
16. Raghu Nath, " "
17. Baij Nath, " "
18. Mahabir, " "
19. Ram Lal, " "
20. Sukkal, " "
21. Sarju " "
22. Sitaram, " "
23. Ram Lal Sunder, " "

-
24. Mewa Lal, Rasulabad, Jaunpur.
 25. Jannan, " "
 26. Ganesh, " "
 27. Ajodhya, " "
 28. Ram Das, " "
 29. Purshotam, " "
 30. Khaderu, " "
 31. Bipat, " "
 32. Sukhram, " "
 33. Gobind, " "
 34. Musai, " "
 35. Ganga Din, " "
 36. Ram Raj, " "
 37. Ra'n Aotar, Isapur, "
 38. Musammat Sukha, Isapur, "
 39. Balai, Bhandari, " "
 40. Babu Lal, " "
 41. Sitaram, " "
 42. Dukhi, " "
 43. Lachman, Mardapur, "
 44. Jit, " "
 45. Raja Ram, " "
 46. Bhagwan Das, " "
 47. Prayag, Kare Patti, "
 48. Raghu Nath, " "
 49. Sarju, " "
 50. Nandhkoo, " "
 51. Purnwashi, Ahyapur, "
 52. Sheoram, " "
 53. Gobind " "

24. *List of Indigo Planters*

1. Raja Harpal Singh Saheb, M.L.O., Jaunpur.
2. Nawab Abd'ul Majid Saheb, C.I.E., "

CHAPTER VI.

MISCELLANEOUS.

(1) Tariff schedule for chief articles of import.

Name 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
3rd	... .58
4th	... .62
5th77	.166
6th	... .83
7th	... .96
8th	... 1.04	
9th	... 1.25	
10th	... 1.37	

General classifications of chief articles of exports and imports.

Commodity.	Class of the above table under which charged.	
	R. R.	O. R.
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 (loose) ...	8	...
24. Cotton piece-good (bales) ...	6	4
25. Cotton piece-goods (not 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	...

Commodity.	Class of the above table under which charged.	
	R. R.	O. R.
32. Scented water ...	9	...
33. Vegetable oils ...	4	2
34. Soap ...	2	...
35. Indigo ...	4	...
36. Sann hemp ...	2	...
37. Hides and skins ...	4	...
38. Oil-cake ...	1	..
39. Saltpetre ...	2	...
40. Sandalwood oil ...	9	...
41. Country tobacco (manufactured)	6	4
42. 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

Jhansi District

By

GANGA NARAIN, BHARGAVA, B.A.



ALLAHABAD

Printed by the Superintendent, Government Press, U. P.

1923

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FOREWORD.

FORESTS play an important part in the economics of the Jhansi district. A proper use should be made of the medicinal drugs and experiments conducted to see what different chemicals and medicines can be prepared out of them. Fly shuttle looms have still to be introduced and demonstration of their working in competition with ordinary throw shuttle looms should be organised. Perhaps some enterprising firm of loom makers may care to give demonstrations by way of advertisement. In that case the department will only be too glad to co-operate and provide facilities for them. A co-operative store of yarn is a necessity and as the dealer of yarn is not necessarily the exporter of cloth, it should be easy to organise such a store. A co-operative store will help much in re-organising the dyeing industry. When the idea of a co-operative society was broached to a few carpet-weavers, they readily took it up and made an application for a co-operative society. It will, it is hoped, not be difficult to organise them on a co-operative basis. Messrs. Chari and Company are prospecting for gold. I met Mr. Chari and he told me that the prospecting for gold in Jhansi district had not been very successful but as work is still in progress, it is too early to make any remarks about it. It would have been well, if some prospecting had been done for other minerals also. Bidi-making has commenced on a cottage basis in Allahabad with taindu leaves obtained from Bundelkhand and imported tobacco. As the raw materials are said to be available in the district, the manufacture of bidis can be very easily started there.

The report has been greatly improved by the Industrial Chemist, Mr. S. T. Gadre, and my special thanks are due to him and to Mr. H. B. Shroff, Principal of the Dyeing and Printing School, Cawnpore. The district staff has ungrudgingly rendered assistance to the Divisional Superintendent. Without their

help and the sympathetic attitude of the Collector and the Commissioner, the task of collecting information would have been well nigh impossible. Messrs. Way, Williamson and Biggwither have also made valuable suggestions personally and the department is specially indebted to them for their guidance. Thanks of the department are also due to the following gentlemen : who helped the superintendent :—

1. Mr. Muhammad Yaqub, Chairman, Municipal Board.
2. Mr. Bodhraj Sahney, Vakil.
3. Mr. Brindaban Lal Varma, Vakil.
4. Pandit Krishna Narain Sheopuri, Head Assistant,
Commissioner's office.
5. Rahmat Ullah, Esq., Divisional Forest Officer.

CHAMPA RAM MISRA.

The 18th February, 1928.

CHAPTER I.

INTRODUCTION.

1. General features of the district.

(a) *Boundaries.*—

North.—Jalaun district, Samthar, Datia and Gwalior States.

South.—Saugor, Central Provinces.

East.—Hamirpur and Orchha State.

West.—Gwalior.

(b) *Features.*—Jhansi consists of 2 portions: Jhansi and Lalitpur sub-division which was formerly a district. The Vindhyan plateau lies to the extreme south and is succeeded by a tract of black soil cut up by innumerable nalas. From this to the north of the Jhansi town is a red soil tract dotted with numerous base rocky hills. Last comes a level black soil tract intersected with deep bedded streams which terminate in a mass of ravines.

2. Rivers.

The important rivers of the district are: Betwa, Dhason, Pahuj and Jamini.

3. Tanks.

The district abounds in tanks. The best known are Barwasagar, Arjar, Bhasneh, Pachwara, Magarwara, Kachneh, Tal-behat.

4. Population.

120,719.

The class of people known as Sonrias plays an important part in the collection of forest produce and deserves special mention. They are closely allied to Gonds, and number about 7,487.

They are mostly found in the Lalitpur sub-division. They are content with each earning about Rs. 6 a month from the collection of forest produce. If the lac cultivation is successful, it would provide a decent livelihood to these men.

5. Forest area.

120,719 acres.

6. Railways.

Line.	Stations.
(i) Great Indian Peninsula Railway main line.	Dhaurra, Jakhlon, Jiron, Lalitpur, Dehwara, Jakhora, Bijrotha, Talbehat, Henota, Basai, Babina, Kajraha, Bijoli, Jhansi, Kaveri.
(ii) Great Indian Peninsula Railway, Jhansi-Cawnpore branch line.	Mustara, Gharmau, Parichha, Chirgaon, Nandkhas, Moth.
(iii) Jhansi-Manikpur branch ...	Orehha, Barwasagar, Arjar, Teherka, Rampur, Mau, Bora.

7. Canals.

1. Betwa irrigates black soil tracts of Moth tahsil.
 2. Pahuj-Ghamau irrigates 13,500 acres.
- None is navigable.

8. List of ferries.

River.	Ferry
Betwa ...	1. Erach.
	2. Kukangaon.
	3. Bhaunraghat.
	4. Ramnagar.
	5. Brahta.
	6. Tilehta.

River.	Ferry.
Betwa—(concluded) ...	7. Nohat.
	8. Manahari.
	9. Seoni.
	10. Rajghat.
	11. Kisalwans.
	12. Basmau.
	13. Ujian.
	14. Nanora.
	15. Kiskigarh.
	16. Karmhars.
	17. Bandgarha.
Jamini	18. Amghat.
Dhasan	19. Pindorghat.
	20. Dhamnaur.

9. List of roads, metalled and unmetalled.

A.—Provincial.

	Miles.
1. Jhansi-Cawnpore and Saugor Road, Jhansi section	70
2. Approach Road to Chirgaon railway station ...	$\frac{1}{2}$
3. Approach Road to Moth railway station ...	$\frac{1}{2}$
4. Approach Road to Punch railway station ...	$\frac{1}{2}$
5. Cawnpore-Jhansi Saugor Road, Lalitpur section...	56
6. Jhansi-Sipri Road	12
7. Jhansi-Gwalior Road	30
8. Khande Rao Gate Road	1
9. Datia Gate Road	1
10. Lachmi Gate Road	1
11. Baragaon Gate Road	2

B.—Local.

First class roads, metalled and drained throughout :-

	Miles.
1. Lalitpur-Mahroni Road	26
2. Mahroni-Maraura Road	15
3. Gursarai-Garotha Road	7

	Miles.
4. Mau-Tehri Road	4
5. Talbehat Feeder Road	1
6. Lalitpur Feeder Road	1
7. Jakhlum Feeder Road	1
8. Goona-Madanpur Road	1
9. Babina Railway Feeder Road	1

Local intra-Municipal roads.

10. Road from junction of Sipri Gwalior to Cantonment	$\frac{1}{2}$
11. Road from Allahabad Bank to Dak Bungalow	$\frac{1}{2}$
12. Road from Sadar Bazar to Dak Bungalow	1
13. Road from Dak Bungalow to City	$\frac{1}{2}$
14. Road from junction to Sipri Gwalior Road towards City	$\frac{1}{2}$
15. Katchery Road	$\frac{1}{2}$

II class roads, metalled, partially bridged and drained.

1. Jhansi-Nowgong Road	47
2. Jhansi Nowgong Diversion Road	4
3. Mau-Punch Road	43
4. Ratausa-Bukhara Road	9
5. Baragaon-Garotha Road	14
6. Chirgaon-Bhander Road	3
7. Moth-Samthar Road	1
8. Rampur Railway Feeder Road	1
9. Ratausa-Bukhara local intra-Municipal Road	1

III class roads, unmetalled, bridged and drained throughout.

1. Lalitpur Durjanpura Road	2
2. Lalitpur-Jakhlun Road	13
3. Lalitpur-Pali Road	13
4. Lalitpur-Gugawara Road... ..	12
5. Talbehat-Serisghat Road... ..	8
6. Byrantha Feeder Road	4
7. Delwara Feeder Road	1
8. Dudhla-Dhaura Road	4

	Miles.
9. Jakhaura Feeder Road	1
10. Talbehat-Purankalan, with branch from Hingora to Nathikhera	15
11. Gugarwara Banpur Road	9
12. Paricba Railway Station	1
13. Jhansi-Unao Road	7
14. Babina-Serisghat Road	13
15. Barwasagar Railway Station Road	1
16. Mustara Railway Station Road	1
17. Jhansi-Murari Road	1
18. Semri-Nand Khas Road	1
19. Garotha-Mau Road	23
20. Ranipur-Sisori Road	7
21. Mau-Rupa-Dhamna Road... ..	2
22. Ranipur Railway Station Road	1
23. Bamori-Rora Road	2

IV class roads, unmetalled, banked, partially bridged and drained.

1. Durjanpur-Rajghat Road	11
2. Madaura-Madanpur Road	12
3. Bangaria-Pirghat Road	17
4. Betwa-Jakhlon Road	13
5. Dhukwan-Nathi Khera Road	8
6. Moth-Bhander Road	13
7. Baragaon-Garotha Road	25
8. Garotha-Moti Katra Road	9
9. Gur Sarai-Saidnagar Road	15

There are V, VI and VII class roads also which extend to 714 miles.

10. List of markets in the district.

Basar.	Market days.
Cattle maza, Jhansi town	Monday and Thursday.
Baragaon	Monday.
Simthari	Saturday.
Barwasagar	Friday.

Bazar.	Market days.
Babina ...	... Wednesday.
Palar ...	... Sunday.
Jarbho ...	... Wednesday.
Lidhora ...	... Friday.
Jhansi ...	... Daily.
Cattle mart, Mau town ...	... Sunday and Saturday.
Mau town bazaar ...	... Daily.
Dhora ...	... Wednesday.
Taktoli ...	... Monday.
Bhanpura ...	... Thursday.
Patha ...	... Tuesday.
Churara ...	... Saturday.
Baragaon ...	... Friday.
Bahadurwar ...	... Monday.
Akses ...	... Do.
Bamhori ...	... Thursday.
Dhwakhar ...	... Tuesday.
Dhamna Paik ...	... Sunday.
Rora ...	... Saturday.
Rewan ...	... Thursday.
Siaori ...	... Tuesday.
Pithipura ...	... Friday.
Kakroora ...	... Sunday.
Pachwara ...	... Wednesday.
Palra ...	... Saturday.
Sijaro ...	... Do.
Ratosa ...	... Monday.
Nota ...	... Saturday.
Hati ...	... Friday.
Uldan ...	... Tuesday.
Deosi Singhpura ...	... Sunday, Monday, Wednesday and Friday.
Kagar ...	... Friday.
Katra ...	... Tuesday.
Magapur ...	... Do.
Pahari Buzurg ...	... Sunday.
Lohari ...	... Monday.

JAMSI DISTRICT.

Bazar.	Market days.
Sia ...	Wednesday.
Kakarwai ...	Tuesday.
Kuraiha ...	Monday.
Bhadarwara ...	Tuesday.
Singar ...	Monday.
Banior ...	Saturday.
Rujan ...	Friday.
Iskil ...	Sunday.
Garwai ...	Tuesday and Thursday.
Khairdkhar ...	Monday.
Dhonaura ...	Tuesday.
Tukra Lachhura ...	Monday and Thursday.
Bararan ...	Saturday.
Moti Katra ...	Monday.
Gorautha ...	Tuesday.
Gorha ...	Monday.
Markuan ...	Tuesday.
Aioni ...	Sunday and Thursday.
Pandwaha ...	Saturday.
Lidhaura ...	Do.
Birpura ...	Sunday.
Nunar ...	Friday.
Sarsainda ...	Saturday.
Gursarai ...	Wednesday and Saturday.
Bararu ...	Saturday.
Pahargaon ...	Do.
Moth ...	Wednesday and Saturday.
Erach ...	Monday and Thursday.
Bakwan ...	Thursday.
Sunaria ...	Monday.
Rampur ...	Sunday.
Talan ...	Saturday.
Chirgaon ...	Monday and Thursday.
Siuri ...	Friday.
Pepra ...	Thursday.
Bans ...	Wednesday and Saturday.

Basar.	Market days.
Jakhaura ...	Thursday.
Nanora ...	Tuesday.
Piprai ...	Tuesday.
Balabehai ...	Monday.
Pali ...	Sunday.
Dongra Kalan ...	Do.
Talbehat ...	Monday and Friday.
Bardha ...	Saturday.
Pura Kalan ...	Sunday.
Chungi ...	Tuesday.
Lalitpur ...	Wednesday and Thursday.
Thanwara ...	Sunday.
Lagon ...	Monday.
Sairwans ...	Friday.
Barod ...	Monday.
Takhlon ...	Sunday.
Bidha ...	Monday.
Khajuria ...	Thursday.
Gurha ...	Friday.
Banpur ...	Sunday.
Gugawara ...	Tuesday.
Kilgawan ...	Do.
Bar ...	Monday and Friday.
Sindwaha ...	Sunday.
Saidpur ...	Saturday.
Narhat ...	Thursday.
Madaora ...	Friday.
Dongra Kalan ...	Do.
Sonrai ...	Monday.

11. List of fairs.

	Town or village.	Date.
1. Kedarnath ka mela	Roni ...	Last date of Asarh.
2. Jalbehar ...	Katera ...	About 16th September.

JHANSI DISTRICT

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		Town or village.		Date.
3.	Jalbehar	... Mau	...	About 16th Sep- tember.
4.	Kalindri Talab ka mela.	Moth	...	End of March.
5.	Ganesh ji ka mela ...	Do.	...	About 3rd April.
6.	Mahadeo-ji ka mela	Nand Khas	...	About 15th Feb- ruary.
7.	Shitla Devi ka mela.	Dhawar	...	About 19th April.
8.	Pir Saheb ka mela...	Talbehat	...	9th August.
9.	Gona Baba	... Kotra	...	4th March.
10.	Naim Nath	... Pawa	...	15th October.
11.	Jhumar Nath	... Rajpura	...	14th February.
12.	Madua Tar	... Rajghat	...	15th November.
13.	Panduan ka mela ...	Parol	...	25th May.

CHAPTER II.

Description of, and suggestions for, the improvement of, the various district industries.

1. Building stone and minerals.

The following are the mineral products of the district: (1) iron ore, (2) copper ore, (3) sand stone quarries, (4) stone quarries for road metalling, (5) kankar pits.

(a) *Iron ore.*—The industry of smelting iron has totally died out now, and one comes across the disused furnaces here and there in the Bijawar series of hills. The main cause of the decay of this industry was the closing of greenwood fellings by the Forest department in the area where iron ore is found. The smelters failed to arrange for fuel, at a reasonable rate, with the result that they closed down their furnaces.

(b) *Copper ore.*—The District Gazetteer gives an account of the geological survey carried out in 1886 by Mr. Mallot. The survey discovered traces of copper ore in village Sourai.

(c) *Stone quarries.*—The district abounds in quarries of stone known as gitti (ballast). It is used all over the district for consolidation on roads and its cost works out at Rs. 3 per 100 cubic feet. It is estimated that the district has got about 250 quarries of this stone.

(d) *Sand stone quarries.*—In Lalitpur sub-division, sand stone of excellent quality is quarried from the Upper Vindhya and there are above 108 stone quarries classified as under:

Quarries.			Quarries.	
(1) Government Forest		(4) Abadi Chandpur ...	89	
Shahpur ...	5	(5) Forest Chandpur ...	43	
(2) Government Forest		(6) Abadi Jehazpur ...	10	
Jamunia ...	1	(7) Abadi Amankhera ...	2	
(3) Government Forest		Total	108	
Jehazpur ...	8			

Several of the quarries are not worked but if all were to be worked, they would yield 1 lakh cubic feet building stone per year. The quarries are under the control of the Forest department and do not come under the provisions of the Indian Mines Act.

The following statement shows the names of quarries at present worked and the quantity of stones quarried from each annually:—

Forest.	Name of quarries.	Kind of minerals.	Output c.ft.	Pit month value. Rs.	Remarks
	North Kelgawan ... Lalitpur.	Soap-stone.	120	120	Stone wares are made from this stone.
	South Jehazpur, Gov. Lalit-ernment For- pur. est.	Building stone	1,500	80	
	Chandpur Abadi	Building stone	500	75	
	Government For- est, Maholi.	Building stone	267	10	
	Abadi Balabehat	Building stone	1,000	115	
	Patria ...	Mill stone	1,360	45	
	Madanpur ...	Building stone	2,000	40	
	Kosi Toran ...	Building and grinding mill stone,	2,500	160	
	Amankhera ...	Building stone	3,000	90	

Building stones are exported to Jhansi, Cawnpore, Sangor, Agra, some parts of the Central Provinces, and the Native States of Tehri and Bijawar.

(e) Soap-stone.— Soap-stone is found in the Kailgawan quarry. In the year 1921-22, Ramadin, contractor, took it on a lease for Rs. 40 per annum, and quarried 120 cubic feet. Cups are made out of it. In 1922-23, 30,000 small cups and 5,000 big

ones were made. Small cups were sold for Rs. 4 per hundred, and the big ones at Rs. 10. They were exported to Agra, Jhansi, Allahabad and Calcutta. Ten labourers were employed by the lessee to break soap-stone and paid at annas 4 a day, and ten skilled labourers (turners) were engaged at annas 6 a day.

Kailgawan quarry is 23 miles off from the Lalitpur Railway station and cups are exported from there to the station on katcha road. The contractor feels transportation difficulties.

The chips of which no use is made should be exported to Calcutta where they can be sold at Rs. 2-8-0 a maund. They are used by foreign firms for several purposes, e.g.

(1) the manufacture of dry lubricants for dressing leather, cloth and rubber,

(2) foundry facings,

(3) adulterating soaps and other goods, and

(4) the manufacture of paper and enamel paints.

(f) *Kankar pits*.—Jhansi and Lalitpur sub-division possess a few deposits of kankar of inferior quality which is burnt by kumhars for lime. The cost of production is said to be Rs. 8 to Rs. 10 per 100 cubic feet. Roughly about 7,000 maunds of this lime is manufactured in a year.

(g) *Others*.—It is said that gold can be found in Patha, silver in Parona and copper in Sonrai. In the Lalitpur sub-division Messrs. Chari & Company have obtained a prospecting licence and are prospecting for gold in the area which covers 69 villages. The work is still in progress.

2. Chemicals.

(a) *Reh*.—Reh occurs in the usar area of Opara, Badoli, and Bailma villages of Moth tahsil. Opara has 20 acres, Badoli 10, and Bailma 12 acres roughly under reh.

(b) *Saltpetre*.—Baldeo Prasad and Barai Lal, contractors scrape nitrous soil from the ruined buildings situated near the villages of Sutta and Singar for the manufacture of saltpetre. About 150 maunds crude saltpetre is turned out in a year which is all used locally by manufacturers of fire-works. Its price varies from Rs. 4 to Rs. 7 per maund,

The process of manufacturing saltpetre consists in putting nitrous soil in a filter of straw known as chhajwa and pouring water gently. The liquor drips in a wooden trough, is sufficiently boiled and is allowed to cool down. On cooling crystals of crude saltpetre are separated.

3. Food grains.

(a) Statement showing area in acres under the principal food grain crops :—

Crops.	1918-19.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Jwar ...	207,580	236,894	246,412			
Bajra ...	12,313	9,467	8,423			
Jwar, with Arhar.	33,834	14,642	33,985			
Dhan Aghani	532	1,385	739			
Dhan Kunwari	14,009	14,029	14,384			
Macca ...	18,206	17,807	16,949			
Urd and moong	17,509	15,652	16,832			
Moth ...	191	113	165			
Kodon ...	53,052	67,155	47,136			
Sawan ...	6,583	7,838	7,848			
Cotton ...	11,423	20,119	13,830			
Wheat ...	29,089	62,057	37,734			
Wheat, with gram.	29,379	74,451	572,941			
Wheat, with Barley.	7,956	9,588	7,760			
Jao ...	21,202	28,657	19,879			
Barley with gram.	2,483	4,921	2,407			
Gram ...	55,900	123,760	76,482			
Mattar ...	496	1,014	420			
Masur ...	5,748	6,874	4,709			
Alsi ...	74	5,280	Not available.			
Tili ...	73,933	49,027	Do.			
Sarson ..	138	907	Do.			
Tobacco ..	426	843	Do.			
Cotton, with Arhar.	6,532	8,861	6,502			

(b) Statement showing the outturn in maunds per acre of the various crops:—

Crop,	Normal year for purposes of calculation.	Yield per acre in maunds.
Jwar	1920-21 ...	10 mds.
Bajra	" ...	4 "
Jwar with arhar ...	" ...	10 mds. Jwar, 4 mds. arhar
Dhan Aghani ...	" ...	3 to 4 mds.
Dhan Kunwari ...	" ...	3 to 4 "
Macca	" ...	3 to 4 "
Urd and mung ...	" ...	3 mds.
Math	" ...	3½ "
Kodon	" ...	5 "
Sawan	" ...	5 "
Cotton	1919-20 ...	4 "
Wheat	" ...	6 "
Wheat with gram ...	" ...	6 mds. proportion $\frac{1}{2}$ and $\frac{1}{2}$.
Wheat with barley	" ...	6 " " "
Jao	" ...	8 "
Barley with gram ...	" ...	6 mds. proportion $\frac{1}{2}$ and $\frac{1}{2}$.
Gram	" ...	6 "
Mattar	" ...	8 "
Masur	" ...	6 "
Alsi	1912-13 ...	3½ "
Tili	1914-15 ...	2 "
Sarson	" ...	2 "
Tobacco	1919-20 ...	3 "
Cotton with arhar...	" ...	4 mds. 33 per cent. of arhar.

(c) *Wheat-grinding.*

The Jhansi city has two flour mills: (1) belonging to Rai Bahadur Ganga Sahai, and (2) to Chaidalal. Rai Bahadur Ganga Sahai's mill is an ice factory with wheat-grinding as a side activity.

If the Military authorities could be persuaded to have their grain milled at Jhansi instead of importing flour from Agra for their use, sufficient work would be found for a mill. Jhansi is big cantonment and must have a large consumption of flour.

4.—Leather.

(a) *Hides and leather.*

Table I.—Showing livestock in the Jhansi district as recorded during cattle census in 1920 :—

Cows.	Bullocks.	Buffaloes	Calves.	Sheep.	Goats.
105,728	170,844	70,847	74,520	90,000	165,781

Table II.—Showing approximate number of cattle slaughtered in slaughter-houses in the district during the last quinquennium :—

Locality of slaughter house.	Number of cattle annually slaughtered.				
	1915-16.	1916-17.	1917-18.	1918-19.	1919-20.
Koncha Bhanwar	1,726	2,792	3,878	16,488	6,573
Jhansi ...	Nil	Nil	3,861	5,368	12,461
Lalitpur ...	5,228	4,545	6,717	14,829	7,081
Total ...	6,954	7,338	14,456	36,685	26,115

The district produces about 20,000 maunds of raw hides annually and imports about 2,514 maunds from the native state

of Tikamgarh and the jagirs of 'Samthar' and Khania Dhana. Out of 28,514 maunds of raw hides, 21,440 maunds are utilized locally and 7,074 maunds exported to Cawnpore, Agra and Delhi. About 3,184 maunds of skins are available annually in the district, out of which 772 maunds are utilized locally and 2,412 maunds exported to Cawnpore, Agra and Calcutta.

The district also imports tanned leather to the value of Rs. 1,29,600 annually from Cawnpore, Agra, Delhi and Calcutta.

Prices: The price of a raw hide is from Rs. 4 to Rs. 6, according to size and quality and that of a skin is Rs. 2 to Rs. 3.

(b) *Tanning.*

The census of 1911 returned 959 male and 289 female tanners as actual workers and 227 males and 47 females as partial agriculturists (227 agriculturist families equivalent to 113 actual workers). A tanner family deals with 15 raw hides in a month (15 raw hides equal to 2 maunds in weight,) and works for about 10 months in a year. Thus on an average the tanners of the district produce 21,440 maunds of tanned leather in a year. Chamars tan hides, and chikwas, skins. The price of locally tanned leather is Rs. 6 to Rs. 8 per hide and Rs. 2-8-0 to Rs. 4-8 per skin according to size and quality. The chikwas are principally meat dealers and carry on tanning of skins as a subsidiary occupation. The census of 1911 recorded 103 male and 103 female chikwas as tanners. They work for about six months in a year. Each chikwa deals with 16 skins in a month (16 skins equal to 1 maund 10 seers in weight). Thus the chikwas produce about 772 maunds tanned skins in a year.

Process.—The process of tanning leather is practically the same as is described by Mr. Walton in his monograph on tanning and working in leather. Briefly put it is: After passing through the usual fleshing, liming, unhairing processes, the hide is sewn into a bag filled with tan-liquor and hung with the open end tied to a beam. The liquor percolates through pores in the hide and is supposed thus to quicken the tanning operation. Percolates are collected and can be used over again. The process is repeated several times until after about a week or ten days'

treatment, the hide is taken as tanned. It is then emptied, opened and laid out to dry. Hides thus tanned are ready to be sold, and meet the requirements of local makers of leather goods.

Ghaunt fruit and dhawai leaves are the common tanning material made use of by the local tanners. A chamar's earnings are said to be approximately Rs. 15 a month. A chikwa hardly earns half of a chamar by tanning.

(c) *Shoe-making.*

The census of 1911 returned 834 males and 170 females as actual workers, and 400 males and 100 females as partial agriculturists (400 agricultural families—200 actual workers). Out of these, 180 shoemakers manufacture shoes of English design in Jhansi town—100 having their own shops and 80 being employed in shoe factories. Besides these, the census also showed 46,323 male and 46,034 female chamars. This shows that a large number of the chamars who, at present, have to find employment outside their proper hereditary profession, will be readily available for any new enterprise on modern lines and scale for the manufacture of leather and leather goods within the district. The district has on an average 1,034 shoemakers who manufacture shoes of Hindustani design and 180 persons turning out shoes of English. A shoemaker prepares about 30 pairs of Hindustani shoes of different sizes in a month and works for about 10 months in a year. The shoemakers thus manufacture about 310,200 pairs of Hindustani shoes of various sizes in a year. The shoemakers who make shoes of English design work for the whole year round and make about 31,200 pairs of shoes of English design. Such a shoemaker prepares about 20 pairs of shoes of various sizes in a month.

5.—*Miscellaneous.*

(a) *Forest produce.*

Forest area is : Reserved forests, 117,996 acres.

Protected area, 2,723 acres.

Forest yield: (1) Timber, (2) fire-wood and charcoal, (3) bamboos, (4) grass and grazing, (5) minor produce.

(i) *Timber*.—The following table shows the timber available in the forests:—

			Cubic feet.
Teak	...	...	13,817
Taindu	...	...	30
Kardhai	...	...	91
Others (mahwa, chirol, kawa)			7,807

Mahwa, chirol, kawa yield both ballis and sawn timber. Teak and taindu are suitable for ballis. The timber of other trees is utilized locally for agricultural implements. Ballis are not exported outside the district. Ballis and timber are taken out of forests on carts. Cartage comes to 12 annas to 14 annas a day per cart. Labour for felling trees is obtainable at 4 annas to 6 annas per day. The teak, bijaisar, siasa, taindu ballis sell from Re. 1 to Rs. 6 each according to size and quality. Miscellaneous ballis 8 annas to Re. 1-8-0 each according to size and quality.

(ii) *Firewood*.—About 50,785 c. ft. firewood is available from the forests of an approximate value of Rs. 1,396. Labour is available in the adjoining villages at 4 annas to 6 annas a day. Cartage is 4 annas to 8 annas per cart from Lalitpur range and 12 annas to Re. 1 from Jhansi range to the nearest railway station. Firewood is exported to Jhansi, Cawnpore and Agra.

(iii) *Bamboo*.—About 1,100,245 bamboos worth Rs. 5,365 are available from the forests.

Their price is as follows:—

	Price in forests.			Price in bazaar.		
	Rs.	a.	p.	Rs.	a.	p.
Dry bamboos ...	0	8	0	0	14	0
			per 100			per 100
			to			to
	0	12	0	1	12	0
Green „ ...	1	0	0	1	4	0
			„			„
			to			to
	1	12	0	2	8	0

Bamboos are exported to Cawnpore, Agra, Gwalior and Jhansi. Their local use is confined to basket-making, tattee-making, and roofing. Sixty men in Jhansi make baskets, &c.

and turn out about 12,000 baskets, 10,000 winnowers, and 15,789 square yards of mats. Baskets sell at Re. 1 per dozen, Winnowers at 10 for a rupee, and mats at 1 anna to 2 annas per square yard.

(iv) *Lac*.—The forests of the district abound in the trees known as dhak and ghont on which lac can be successfully grafted, but up to this time no attention was paid by the Forest department towards its cultivation. At present the annual collection of lac from the Jhansi forests amount to 7 maunds. The divisional forest officer of Jhansi, under the orders of Government, visited Damoh in the Central Provinces to study the method of lac propagation followed there and he will soon take up a systematic cultivation of lac in Jhansi forests.

(v) *Gum*.—About 800 maunds of gum is collected every year from different species of trees, viz., babul, nim, etc. The Divisional Forest Officer has moved his conservator to allow him to undertake an experiment of tapping the trees for the extraction of gum. If the trees are properly tapped, the annual yield of gum is estimated to come up to 10 to 12 thousand maunds. Gum can also be extracted from (1) karar, (2) gunj, and (3) salai. The time for tapping commences from the 15th March. A tribe known as Saunriyas collect gum from these trees for contractors. The procedure followed by the Saunriyas in tapping the trees for extraction of gum consists in making a circular wound of 6" diameter on stems of trees. They are thus able to obtain 1 to 1½ seers of gum from each tree in one season. The average market price of gum ranges from Rs. 3 to Rs. 4 a maund according to quality. The Forest Officer is trying to build up a foreign export trade in gum.

(vi) *Outchhu*.—It is difficult to give the approximate area under khair trees as they do not growgregariously anywhere in the forest and are found dispersed amongst other trees. The manufacture of katha was carried on before in the Jhansi district and is carried on in the adjoining native states of Tehri and Chhattarpur. The Forest department proposes to revive the manufacture of katha. The Divisional Forest Officer is preparing a scheme for leasing out khair areas.

(vii) *Others*.—The following are some of the other forest products :—

1. *Musli, safaid and syah.*
2. *Amaltas.*
3. *Indra Jao.*
4. *Nasod.*
5. *Satawar.*
6. *Bilai-kand.*
7. *Siwainyan.*
8. *Maror phali.*
9. *Bai Birang.*
10. *Aonla.*
11. *Bahera.*

These drugs are found in the forests. The quantity of each of these drugs collected annually could not be known. A jungle tribe known as Saunriyas collects these drugs for the contractors. The contractors do not find the collection of drugs paying and hence they do not pay much attention towards their collection. The sale of these drugs can be encouraged if Hakims are put in touch with the contractors.

12. *Kori-kand.*—It is largely produced in the district and the weavers use it as a starch for sizing yarn. It sells at 2 aunas a seer in season.

13. *Ghont.*—The fruit of this tree is used as a tannin by the tanners of the district. The annual collection of ghont fruits comes up to 2,267 maunds.

14. *Dhavai.*—Its leaves are used as tannin. Its flowers are used as mordant for the dyeing of kharwas at Mau and Moti Katra.

15. *Syari.*—The branches of syari are used for roofing the houses in the villages. It is used for the manufacture of baskets.

16. *Harsingar.*—It is another kind of fibre used for basket-making in the villages.

17. *Maker and dhak.*—The branches of these trees are used for ropemaking. The dhak tree can be utilized for the propagation of lac.

18. *Honey and wax.*—The Lalitpur sub-division abounds in bee hives. Saunriyas gather honey and wax. The annual collection of honey and wax comes up to 150 and 200 maunds respectively.

19. *Chironji and achar.*—The Lalitpur sub-division abounds in the trees of chironji and achar. Saunriyas gather chironji fruits from the zamindari as well as the forest areas on their own account and for the contractors. Chironji fruit sells at 2 seers per rupee in the market of Lalitpur.

(b) *Jail industries.*

Central Jail, Jhansi.—The jail manufactures the following articles:—

1. Cotton carpets—blue and white at Rs. 3 per seer.
2. " " flowered and coloured at Rs. 4-8-0 seer.
3. Munj mats, plain, at 14 annas per square yard.
4. " " coloured, at Re. 1-4 per square yard.
5. Cotton durries, coloured, at Rs. 4 per seer.
6. " " striped with blue border, at Rs. 3-4-0 per seer.
7. " " blue and white, at Rs. 3 per seer.
8. " " plain white, at Rs. 2-12-0 a seer.
9. Dusutis at 8 to 12 annas a yard.

The jail only manufactures these articles to order. It does not compete with private enterprise.

Yarn is imported from Cawnpore at Rs. 10 per bundle, and munj from Kasganj at Rs. 2 to Rs. 4 a maund. The jail charges a profit of 25 to 50 per cent.

(c) *Utilisation of slaughter house bye-products*

Bones.—The district has got three big slaughter houses, and it is estimated that 25,000 maunds of bones are gathered annually in the district, for export to Bombay and Calcutta seaports. There they are crushed into meal and exported abroad. Bones sell at Re. 1 per maund. No industrial use is made of bones in the district at present.

6.—Oils.

(a) Pressing of oil-seeds.

Outturn of oil-seeds.—The following oil-seeds are available in the district :—

Name of oil-seed.	Outturn in a normal year in maunds.	Average prices prevailing in the district per maund.	
		Wholesale.	Retail.
		Rs. a. p.	Rs. a. p.
Sesamum (til) ...	248,894	6 0 0	6 8 0
Rapeseed (sarson) ...	4,442	6 0 0	6 12 0
Linseed (alsi) ...	97,443	5 12 0	6 12 0
Mahwa ...	175,000	3 to Rs. 5	4 to Rs. 6
Cotton-seed ...	64,915	3 0 0	3 8 0

Consumption of seeds.—No oil-seeds are imported except in famine years. 75 per cent. of linseed is exported—a portion to Cawnpore but the bulk to the seaports of Calcutta and Bombay. 80 per cent. of the mahwa seed is exported to Cawnpore and Agra and to the seaports of Calcutta and Bombay. The rest is crushed in the district. Mahwa oil is either used locally as lamp-oil, or exported to Cawnpore and Meerut. Rapeseed and sesamum are crushed locally to an extent of 40 per cent. more or less. The remaining 60 per cent. goes to the oil mills of Agra, Karvi (Banda), Cawnpore, Allahabad, and Dehra Dun, though a portion of sesamum is also exported to Bombay. The ginning factories export their cotton seed to the Punjab, while the hand-ginned seed which forms 50 per cent. of the total amount available in the district is consumed locally as cattle food.

The sesamum cake is fed locally to cattle and commands a good sale; rape-seed cake comes next in demand, and has mostly to be fed by the telis themselves to their cattle. There is no use for the mahwa cake, which is simply used as fuel by the telis.

The census of 1911 returned 1,700 males and 1,613 females as actual workers and 455 males and 185 females as partial agriculturists (455 agriculturist families equivalent to

227 actual workers). Ordinarily each teli family works with one kolhu. Sesamum is crushed for eight months, linseed and mahwa for two months in the year and rapeseed occasionally. Work is slack in the rains, enough oil to meet local demand is always produced.

It will be superfluous to give the description of the kolhu with which almost every Indian is familiar; but, it may perhaps be mentioned that an average kolhu in use in this district is of a size capable of crushing 10 to 12 seers of seed in a day of 10 working hours. On an average 38 per cent. of oil is produced. The industry at present exists as a cottage industry and is in the hands of hereditary oil crushers called telis. It is distributed all over the district and is concentrated in the following places :—

Jhansi	has as many as	462	telis engaged in this trade.
Lalitpur	ditto	295	ditto.
Chirgaon	ditto	90	ditto.

On an average the teli families in the district produce the following quantities of oils and oil-cakes in a year :—

		Oil.	Oil-cakes.
		Maunds.	Maunds.
Sesamun	...	38,540	77,080
Rapeseed	...	500	1,000
Mahwa	...	9,635	1,270
Linseed	...	9,635	19,270

The earnings of a teli family vary between 8 and 10 annas a day.

These cottage workers will stick to the time honoured kolhu which is cheap and handy. Modern power machinery of any description is not used for the crushing of oil seeds in the district. Even the smallest unit of a modern plant is out of their consideration, the all important question of capital being against them. Maintaining, therefore, their present methods of working, the only avenue in which they can be given any relief is in the joint purchase of their raw material on co-operative basis, whereby they can avoid exorbitant rates of interest usually charged by local money lenders. They can effect a

further saving by purchasing in bulk and in proper season all the seed needed for their yearly consumption.

It has been shown above that after making oil sufficient to meet the actual needs of the district, over two-thirds of the oil seed produced in the district is exported as such. A new enterprise in oil crushing by installation of a modern oil mill within the district can therefore be safely recommended at least on the score of supply of oil seed which amounts to a little over 400,000 maunds a year. Disposal of the products of manufacture will have to be wholly sought for outside the district unless newer openings in the shape of soap works, manufacture of paint and lubricating oils, etc., are found within the district. There is a complaint that railway facilities are not available at present for carriage of goods to all parts in the country but special rates are granted only for booking to seaports.

An expansion of the oil industry of Jhansi district will depend upon the development of its export trade in oil. With the opening of new soap works in the country and the starting of the manufacture of paint, etc., it is hoped that the extra oil produced by the crushing of seeds which are exported at present will be easily absorbed.

(b) *Perfumery.*

(i) *Keora.*—A village named Bar of Mahroni tahsil in Lalitpur sub-division has a keora grove under the control of the sub-board of Lalitpur, which used to be leased for Rs. 275 a year, five years ago, but which was lately damaged by a fire breaking out in its vicinity. It is estimated that during the rainy season it still yields about 2,000 keora flowers. No industrial use has been made of these flowers so far.

Narain grove.—Jhansi has got another grove of keora, known as Narain Bag, under the control of the municipality. Last year it was leased to Abdul Sattar, who is supposed to have distilled keora water from its flowers. But I did not find any still at Abdul Sattar's place.

If any gentleman takes on long lease both these keora groves, he can build up a small industry of keora water.

(ii) *Khas*.—*Khas* is found in large quantities in the villages of Barwasagar, Baragaon, and Erich. So far no attempt has been made at utilising it for manufacture of *khas* scent. *Khas* is used locally in *tattis* which are much in demand in the summer season for the Government, Railway and the Cantonment officers. Jhansi imports *khas* from the Jalaun district. Annual outturn of *khas* in the Jhansi district is about 1,500 maunds.

7.—Other Industries connected with edibles.

(a) *Dairy-farming*.

Cattle census of 1920 shows the existence of the following milch cattle in the district:—

Cows ...	...	...	...	105,728
She-buffaloes	..	...	...	70,847

There is one dairy in Jhansi owned by Babu Surendra Nath Chowdhery. The proprietor has taken a lease of village Pulli Pahari, a Government estate, for grazing his cattle. The cattle are kept there. The village has been in the hands of the present lessee for about 30 years. The term of the present lease expires in 1923, and the proprietor of the dairy is keen on renewing it. In fact he wants to take a permanent lease, if one could be given to him. At the least he shall be glad to renew his present one for so long a period as he could get it for. He deserves help. The dairy keeps its own cattle and sells their milk. It also purchases milk from the neighbouring villages and churns it into cream, butter, etc. Butter is exported mainly to Gwalior and Delhi, and in part to Dharampur, Igatpuri, Bareilly and Calcutta.

Tobacco.

(b) The district produces about 2,544 maunds of tobacco, most of which is exported to Cawnpore and Lucknow. Pounded tobacco is imported from Calcutta and Monghyr to the extent of 5,000 maunds at Rs. 30 per maund. This sells at Rs. 31 per maund. Manufactured tobacco comes from Lucknow and Kanauj, and chewing tobacco is imported from Benares to the value of Rs. 12,000 a year and bidis from Jubbulpore. Manufactured tobacco sells at Rs. 2 to Rs. 6 per seer, and smoking

tobacco at Re. 1-8-0 per seer. Smoking tobacco is also manufactured locally.

Suggestions.—The forests of the district abound in taindu leaves which are used as covers for bidis. The raw materials required for bidi making, i. e., taindu leaves and pounded tobacco are available in the district. A dealer in tobacco may be sent to Jubbulpore for studying the method of bidi-making there and on his return he may be asked to introduce the same here.

8.—Textiles.

A.—Cotton.

(a) *Raw cotton.*—Yellow and white flowered varieties of country cotton are grown in kabar and parwa soils. The staple is 0·8" to 0·9" long, and the cotton is classed for trade purposes as "Bengal superfine." An attempt to grow American cotton did not succeed. The annual outturn of kapas is 104,106 maunds out of which about 15,000 maunds of kapas is exported to Harpalpur, Kunch, and Datia State whence it is re-exported to Bombay and Cawnpore after being ginned. The district also imports about 8,266 maunds of kapas from the adjoining states of "Samthar" and Tikamgarh, 'Khania Dhana.'

(b) *Ginned cotton.*—The district gins about 97,372 maunds of kapas out of which 13,365 maunds are ginned by the ginning factory at Mau and 84,007 maunds by hand. The ginning percentage of kapas is 33 per cent. on an average. Hence the district produces about 32,457 maunds of ginned cotton in a year, out of which 4,455 maunds are exported to Bombay, 10,598 maunds are used for spinning and 17,404 maunds consumed locally for other purposes. The district has only one ginning factory at Mau owned by Rai Sahib Ganga Prasad. Further particulars about the factory are given in chapter IV (Statistics).

Prices.—Kapas sells at Rs. 11 to Rs. 13 a maund in season and ginned cotton Rs. 30 to Rs. 33 per maund.

(c) *Yarn.*—The number of actual workers engaged on ginning and spinning in the year 1911 was 1,020 males and 1,833 females. To this should be added 5,587 female spinners subsequently shewn

as weavers helping their husbands in weaving. Hence the total number of spinners in the district is 8,440 persons. A spinner can spin 4 chbataks of yarn per day. The hand-made yarn is uneven and is below 10^s. A spinner works for seven months in a year. The district produces 13,248 maunds of hand-made yarn in a year and imports 27,150 maunds or 5,430 bales of mill made yarn from Bombay, Agra, Cawnpore, Petlad, Etawah, Hathras, Delhi. The Kushtas of Jhansi exclusively use mill made yarn of higher counts. Counts 10 to 16 are used by Koris while Kushtas use finer counts 40^s to 60^s. Dyed yarn costs Rs. 20 to Rs. 30 per lb. The price of yarn varies according to the fluctuations of rates in the mills. An average may be taken as Rs. 350 per bale. The following chart shows the imports from each centre :—

1,200 bales	from	Bombay,
550 "	"	Calcutta,
288 "	"	Ahmedabad,
27 "	"	Delhi,
22 "	"	Gwalior,
3 "	"	Kanauj,
3 "	"	Ambala,
1,610 "	"	Agra,
295 "	"	Cawnpore,
50 " (dyed)	"	Petlad,
2 " (")	"	Etawah,
1,080 "	"	Hathras.

5,430 bales of yarn—each bale is of about 5 maunds.

(d) *Cotton fabrics.*—The weavers of the district may be conveniently divided into two classes : viz. (1) Kushtas, weavers of fine cloth and (2) Koris, weavers of rough cloth.

Kushtas.—The city of Jhansi has 400 families of Kushtas engaged on hand-loom weaving. About 200 years ago the Kushta weavers migrated from Chanderi in Gwalior State and settled down at Jhansi. They were patronized by the Maharashtra rulers of Jhansi, and produced very fine cloth from yarn of 150 counts. But their condition is not so good now. They are dependent on

the yarn dealers for the supply of yarn (which they usually buy on credit) and for the sale of their finished products.

Process of weaving and warping.—The processes of weaving and warping have been described by Mr. C. A. Silberrad in his monograph on cotton fabrics and need not be reiterated here. A root known as kori-kand is used for sizing yarn. The root is boiled in water and when sufficiently soft is allowed to cool down. Its contents are then squeezed out in water and the whole is strained through a cloth. The viscous liquid thus obtained is poured in an earthen trough in which yarn is immersed for sizing.

Varieties of cloth woven by the Kushta weavers.—(1) Dandiya, (2) dhoti, (3) dupatta, (4) safa, (5) pagris, (6) band (female skirts), (7) mandil (turban).

These weavers use mill made yarn only mostly of higher counts. For their exclusive use Jhansi imports about 2,150 maunds of yarn of different counts. A Kushta family works for about 43 weeks in a year and consumes about 5 seers of yarn in a week. It is estimated that the Kushta weavers of Jhansi turn out such cloths to the value of 2 lakhs of rupees annually.

Marketing system.—The firms mentioned in chapter V (directory) advance yarn and gold thread, etc., to the Kushta weavers who weave cloth for the firms charging their wages only. The Kushtas seldom work on their own account and generally work for these firms. These firms export all the varieties of cloth prepared by the Kushta weavers for them to the following places:—

- (1) Indore, (2) Bhusaval, (3) Primerni, (4) Hoshangabad, (5) Khandwa, (6) Jalgaon, (7) Wardha, (8) Malkapur, (9) Akola, (10) Amraoti, (11) Bombay. The female skirt cloth known as 'band' is not exported but is locally sold in the district.

A Kushta earns about Re. 1 a day and the dealer makes a profit of about one anna per rupee.

The dealing firms told me that the demand for the varieties of cloth prepared by the Kushta weavers is greater than the supply and the weavers cannot cope with the demand. The Kushtas cannot weave more than three yards of fine cloth in a

day on their primitive throw-shuttles. The production will increase with the introduction of fly-shuttle looms, but fly-shuttles are not suitable for weaving very fine counts. A peripatetic weaving school may be sent round to Jhansi to demonstrate to the weavers the advantages of fly-shuttle hand looms. If the weavers take to these looms, the dealers are prepared to purchase them for their use.

Koris are weavers of rough cloth. In 1911 their number actually engaged in weaving was: 7,116 males, 5,587 females. The weavers work for about 300 days in a year. For two months, viz., July and August work is discontinued as yarn cannot be sized properly during rainy season. On an average a weaver family consumes five seers of yarn in a week and turns out three to five pieces of cloth. The weavers consume 13,248 maunds hand-made and 25,000 maunds mill-made yarn in a year and produce 42,837 maunds of cloth (1 maund 10 seers yarn=1.16 seers cloth).

They weave the following varieties of rough cloth, and earn about Re. 1 a day.

- (1) *Ekris*—(Cloth used for bedding and lihafs) chiefly in Mau and Garohta tahsils.
- (2) *Garha*—(Cloth (rough) for coating, etc., all over the district.
- (3) *Dhotis*—All over the district.
- (4) *Shirting cloth*.—Mau, Jhansi, Raipur, Barwasagar, Koncha, Bhawan, Erich.

Yarn is purchased on credit at rates higher than the current ones by 4 annas per bundle. Credit is allowed for one month. A bundle is sufficient for one Kori family for one week.

Suggestions for improvement.—A central agency for the sale of yarn should be started at Jhansi, which should content itself with the commission it gets from the mill. Joint purchase societies of weavers should be formed at Mau, Chirgaon, Raipur, Jhansi and Lalitpur. The central agency should sell yarn at the mill rates and so should the joint purchase societies. Fortunately the yarn dealers in Jhansi are not necessarily cloth dealers also. The weaver is therefore free to sell his cloth and

there is no apprehension of the dealer compelling the weaver to purchase his yarn by refusing to buy the weavers' cloth.

To sum up the following varieties of cloth are produced in the Jhansi district, the chief places where a particular variety of cloth is manufactured being noted against each:—

Name of place.	Variety of cloth.	Counts of yarn.	Class of workers.
Jhansi	1. Shirting cloth.		
	2. Dhotis for men and women.	...	Kushta weavers.
	3. Safa with gota borders.		
	4. Pagris (turbans) ...	40 ^s to 60 ^s	
	5. Marallia saris.		
	6. Saris with gold thread end.		
	7. Fine cloth for skirts.		
	8. Mandil and sela (turban).		
Mau	1. Ekris	... 12½ ^s to 16½ ^s	Koris.
	2. Garhas }		
	3. Kharwa dyeing ...	"	Koris, Sunkar, Dhobies, Kundigar.
	4. Jazim, quilts, dhoties, etc. (calico-printing).	"	Koris, Sunkar, Dhobies, Kundigar and Chhipis.
Ranipur and Katra.	5. Shirting cloth ...	"	Koris.
	Kasbi (skirts for women).	"	Do.
Moti Katra	Kharwas ...	"	Workers as in Mau.
Lalitpur	1. Garhas, dhoties, shirting cloth.	"	Koris.
	2. Calico-printing ...	"	Chhipis as in Mau.
Erich	Dhotis, shirting cloth, ekris.	"	Koris.

N. B.—Rough garha cloth is manufactured all over the district.

The district of Jhansi imports cloth annually from the following places to the extent noted below :—

	Rs.
Bombay	8,63,910
Calcutta	6,97,469
Cawnpore	6,88,941
Ahmedabad	2,75,150
Delhi	25,690
Indore	3,42,850
Etawah	429
Beawar	45,890
Ludhiana	1,501
Ujjain	14,336
Dhariwal	18,332
Nagpur	1,925
Amritsar	1,201
Sholapur	1,560
Rohri	15,250

The figures of the import of cloth in the Jhansi district are based on the information collected from octroi, railways, and shop-to-shop enquiries at Mau, Lalitpur, Moth and Chirgaon. The figures are only approximate.

(e) *Dyeing.*—

(i) *Kharwa-making.*—Kharwa is a dyed ekri cloth used for beds. Mau and Moti-katra are two places where the dyeing of kharwa is carried on.

The firms noted in chapter V (directory) prepare Kharwa. They purchase ekris and get them dyed.

The dyeing of kharwas in the Jhansi district appears to be a speciality of Mau. The whole process is divided into three parts each being entrusted to separate individuals who know how to do the cloth up to a certain stage or after a certain stage only. Thus the washerman washes and mordants the cloth, which is then passed on to the dyer called a Sunkar who starting with the mordanted cloth fixes the red alizarine dye on it and washes and passes it on to the finisher known as "Kundi-gar" who gums it and calenders it into characteristic folds.

Kharwa is also dyed with *Patang* wood, but the dye is not so fast as the alizarine red.

The usual wages of a washerman are Re. 1-4-0 for washing 60 ekris, those of a Sunkar Re. 1-4-0 for dyeing the 60 ekris, and of a Kundigar Re. 1-12-0 for sizing and calendering the 60 dyed ekris.

	Rs.
Wholesale price of one bale known as ganth =60 ekris is	130
Cost of fast dyed bale	150
Wholesale selling price of fast dyed bale of kharwas=	154
Retail sale price ditto	159
Cost of one bale of kharwa dyed in fugi- tative colour	141
Wholesale selling price of same	145
Retail ditto	148

Annual manufacture at Mau of dyed kharwas is estimated roughly at 1,200 bales.

The principal exports of Kharwa are to Agra, Calcutta, and Rajputana.

Kharwa making at Moti-katra in Garotha tahsil deserves a more mention.

(ii) *Kasbi making at Ranipur and its adjoining villages.*—Kasbi, a cloth used by women for making skirts, manufactured at Ranipur and its adjoining villages, 2,000 families are engaged in this work, working for about 43 weeks in a year. Each family weaves 3 kasbis in a week. Between them they weave about 180,000 kasbis in a year and consume 350 bales of mill yarn mostly of 16½s. A kasbi piece sells for Rs. 4. Synthetic dyes are used. Otherwise the process of weaving is the same as is described by Mr. Silberrad in his monograph on cotton fabrics. Kasbis are exported to Datia, Chhatterpur, and other adjoining native states as well as to Rajputana, Agra and other districts of Bundelkhand.

(f) *Calico-printing.*—The centres of Calico-printing in the district are Mau and Lalitpur. There are 100 calico-printers'

families at Mau, and 11 at Lalitpur. Dhoties, dupattas, Jazims (floor matting), chintz, lihafs (quilts), and cloth for beds are usually printed.

Blocks for printing.—The blocks used in printing are made at Tori Fatehpur, a jagir near Mau. Their prices differ with their size and quality. Ordinarily five blocks can be had for a rupee. The blocks are moistered with a composition of red ochre and myrabolans and other mordants, e.g. dhavai flowers, &c. The mordants are thickened with gum in order to make them of necessary consistency.

For dyeing of ekris before printing, see note on dyeing.

It is estimated that Mau produces printed cloths annually to the value of Rs. 80,000. The cloth is chiefly exported to other districts of Bundelkhand, Rajputana and the native states of Datia, Gwalior and Tikamgarh. Lalitpur printers cater for the local market only.

B.—Wool.

(a) *General.*—In the cattle census of 1920 the number of sheep was 90,000. Sheep are sheared three times in a year, viz., March, July, and November. One sheep yields about 12 chhataks of wool in the three shearings. The wool obtained from the spring shearing is the best. About 1,687 maunds wool is locally obtainable and about 1,950 maunds is imported from the Rajputana, Datia, and Tehri States, Mahoba and Banda. Mahoba and Rajputana each contribute 600 maunds. Banda and Tehri 200 maunds and Datia 350 maunds. Wool from Jhansi division and native states sells at Rs. 25 to Rs. 28 a maund and Rajputana wool at Rs. 20 to Rs. 23 per maund, according to quality. Wool is carded and spun in Jhansi and yarn is then exported to Mirzapur and Bhadohi. Charge for carding is Rs. 4 per maund and for spinning Re. 0-2-6 for 1½ seers of wool. Yarn sells at Rs. 47 to Rs. 56 a maund according to quality of the wool from which it is spun; Railway freight from Jhansi to Bhadohi is Re. 1 per maund for raw wool and Re. 1-3-9 per maund for woollen yarn. About 100 maunds of wool is consumed by the local carpet-makers and the rest goes out as yarn.

(b) *Carpet-weavers.*—There is a tradition among the carpet-weavers of Jhansi that their ancestors migrated from village Ghosi in the Mirzapur district. The demand for carpets has now gone down and their manufacture has become less paying than it once was. Some of the weavers have given up their profession, and have taken to service in the Railway workshops and elsewhere.

In 1911 there were 24 families of carpet-weavers. Out of these 10 families are still following their profession. These weavers have wool carded and spun in their own families, and manufacture about 240 carpets 7'×4' and 360 asans (prayer mats). These sell at Rs. 15 to Rs. 20 per carpet and Rs. 2-8-0 to Rs. 4 per asan according to size, weight and quality. The carpet-weavers seldom work on their own account. A firm known as "Ganesh Saraf" Kalinwala, advances money to these weavers paying them at Re. 1 a day on an average. Jhansi proper has one woollen carpet factory owned by Messrs. Jagannath and Govind Dass. Further particulars about the factory have been given in chapter IV (statistics).

At the instance of the writer, Messrs. Narain Dass Ram Prasad have started another carpet factory, which has found employment for those carpet-weavers who had taken employment elsewhere.

Suggestions.—A co-operative society for the purchase of wool is a necessity. An application from 10 local carpet-weavers has already been forwarded to the Registrar, Co-operative Societies.

CHAPTER III.

POSSIBILITIES FOR THE DEVELOPMENT OF VARIOUS INDUSTRIES.

Oil pressing.—A very large quantity of mahwa seed is available in the district. The district of Jhansi can supply about 1 lakh maunds of mahwa seed and other districts of Bundelkhand can also be counted on for its supply, specially Banda district. No where can we find a cheaper market for the purchase of mahwa seed, which sells at Rs. 3 a maund in season, than in Bundelkhand. Some leading business men of Jhansi are desirous of starting an oil crushing plant for mahwa seed and these gentlemen met the Director of Industries when he visited Jhansi. He advised them to wait until he could recommend the most suitable plant for crushing mahwa seeds. The mahwa oil can command a large consumption locally as well as outside. It is extensively used for the manufacture of Dhobi's soap and for adulteration in ghi. The district already exports some oil to Meerut and Cawnpore. A market for mahwa oil can also be found for export to foreign countries among manufacturers of soaps, paints and varnishes.

The district is also famous for its sesamum seed which is exported in large quantities. There exists scope for starting a power plant for crushing sesamum seeds. Rai Ganga Prasad Sahab of Mau has got a ginning factory at Mau run by a steam engine. It works only for 3 months and remains idle for 9 months in a year. If he sets up a few rotary ghanies worked by the steam engine, he would be able to utilise some of the surplus product of sesamum locally and profitably. I have made this suggestion to him and he agrees to set up a few rotary ghanies. Mau is a big and important market for sesamum and there would be little difficulty in getting the raw material. The oil-cake turned out by the machinery can be profitably exported to Jhansi and other places.

(2) Besides yielding timber, fire wood and bamboos and providing excellent grazing for the cattle, forests yield many other minor articles of which a list will be found given in the report. They can be made to yield many other things like gum, honey, drugs, catechu and lac and it is a hopeful sign that the Divisional Forest Officer is interesting himself in the systematic cultivation of lac and gum.

(3) Of raw hides and skins a major portion goes to Cawnpore, Agra, and Calcutta. Tanning materials are available locally and labour is cheap. It should be possible to tan the hides in the district and manufacture shoes, suit cases, &c., from the leather. The present position is that the district imports leather while it exports raw hides. Similar is the position with regard to cotton. The district imports about 27,150 maunds of mill yarn and exports about 5,000 maunds of ginned cotton. Very fine cloth is woven in the district as well as coarse.

(4) The dyeing industry of Jhansi has been an important one but it is declining. Twelve hundred bales of kharwas are still dyed. The needs of this industry are cheap cloth and fast vegetable dyes. The carpet industry of Jhansi deserves mention only on account of the fact that its decline has thrown many weavers out of employment. These people are willing to return to the business if sufficient capital were forthcoming in fact when one firm wanted to take back a few, they gladly came. Woollen yarn is imported from the district and carpet factories can be easily organised. Colours are not fast at present and the designs are coarse.

(5) The district has great grazing facilities and large herds of cattle. Ghi and butter making can both be organised. Modern dairying may not pay as the cost of management makes the products rather dear. Rupee 1-2-0 per lb. is the cost of butter against Re. 1 per lb. of ghi while ghi is clarified butter and is supposed to contain more fat. Besides this, ghi is much more in demand than butter on account of the tastes of the people. Ghi-making on cheaper lines should, therefore, be organised.

(6) The utilization of slaughter house products is a problem everywhere as here. Bones, guts and other slaughter house

products are made little use of. A portion is exported but no inconsiderable amount is simply wasted. The available quantity can be increased very much with proper organization.

(7) Of others, which deserves any mention is (1) the existence of 2 keora plantations which can yield about 4,500 flowers a year. These should be distilled in the district. And (2) khas which is available in quantities not negligible for a perfume manufacturer. Jhansi khas is of a medium quality, but 1,500 maunds of khas roots can yield 200 lbs. of vetivert oil which at the present rate of Rs. 90 a lb. is worth Rs. 18,000. The quantity at present put in the market is not sufficient even for the district needs which consumes a large quantity in providing khas tattis for its civil and military population, but it is possible that the quantity can be increased with better organization.

CHAPTER IV.

STATISTICS.

1.—Building stone and minerals.

Number of stone quarries.—250. For road repairs gitti is broken from these quarries.

Number of sand stone quarries.—108. Such quarries out of which some quarries at nine places worked.

Annual cutturn.—9,247 cubic feet.

Export.—To Jhansi, Cawnpore, Saugor and Agra.

Soapstone wares.—

Year.—1921-22.

Owner's name.—Ramadhin, contractor of the quarry.

Annual amount of stone quarried.—120 cubic feet from Kailgawan quarry.

Number of stone wares made.—30,000 small cups and 10,000 big cups.

Export.—To Jhansi, Allahabad and Calcutta.

Profits.—Rs. 470 annually.

Labour.—10 labourers at Re. 0-4-0 a day and 10 turners at Re. 0-6-0 per day.

2.—Chemicals.

Saltpetre.

Name of places where manufactured.—Satla, Singor (Garotha tahsil.)

Annual production.—150 maunds.

Names of contractors.—Baldeo Prasad and Barai Lal.

Labour.—12 men at Re. 0-6-0 a day.

Reh.—The area under reh is 32 acres only.

3.—Food grains.

Flour mill.

Owner's name.—Rai Bahadur Ganga Sahai, Jhansi.

Year.—1921-1922.

Machinery.—Four stone rollers of 3½ feet diameter, capacity 2½ maunds of wheat per hour, run by 26 H. P. steam engine.

Labour.—Eight unskilled labourers paid at Re. 0-6-3 a day.

Working days.—Two and a half months in a year.

Annual outturn.—20,000 maunds of flour.

Charges.—Re. 0-8-0 per maund for grinding wheat, and Re. 0-7-0 for other grain.

Remarks.—The mill does not work on its own account but works on commission.

Wheat grinding is only a side activity of the ice factory owned by the proprietor.

4.—Leather.

A.—TANNING OF LEATHER AND SHOE MANUFACTURE.

I.—Statement showing production and disposal of raw hides and skins.

Kind of hides.	Annual production in maunds.	Import of raw hides and skins.	Local use.	Export.		Imports of tanned leather.	
				Place of consignment.	Quantity.	Place of origin.	Quantity.
Raw hides	20,000	8,514 maunds from Tizamgarh, Sahitbar and Khania Dhans.	Mds. 21,440	Cawnpore, Agra and Delhi.	Mds. 7,074	Calcutta, Delhi, Agra and Cawnpore.	Mds. 129,800
Raw skins	3,184	Ditto ..	772	Cawnpore, Agra, Delhi and Calcutta.	2,412	..	

II.—Statement showing the number of persons engaged in tanning of leather.

Actual workers.		Partially agriculturists.	
Males.	Females.	Males.	Females.
959	289	227	47
103	103		

III.—Statement showing production of tanned leather and wages of tanners.

Kind of hides tanned.	Quantity in maunds.	Wages.	Remarks.	Export.	Local use.	
					For shoe making.	Other uses.
Tanned hides	21,440	Re. 0-8-0 a day.	Chamars tan hides.	(Hides) 14,816 maunds to Tikamgarh, Gwalior and Samthar.	Mds. 5,124	Mds. 2,000
Tanned skins	772	Re. 0-4-0 a day.	Chikwas tan skins.	Nil.	Nil.	740

IV.—Statement showing number of persons engaged in shoe making.

Actual workers.		130 shoemakers make shoes of English design and have their own shops in Jhansi proper.	Partially agriculturists.	
Males. 834	Females. 170		Males. 400	Females. 100

V.—Statement showing consumption of tanned leather and outturn of shoes.

Consumption of tanned leather.		Outturn of shoes.		Wages or profits.
Local. For shoe making.	Imported.	Hindustani design.	English design.	
Mds. 5,124	6,240 pieces (thans) of leather.	256,200	Pairs. 19,200	Re. 0-12-0 to Re. 0-14-0 per day.

Shoe making.

Year.—1921-1922.

Raw material.—2,400 pieces of imported tanned leather.

Machinery 1.—Sewing machines.

2.—Lasts.

Labour.—50 shoemakers paid at Rs. 35 each per mensem

Outturn.—12,000 pairs of shoes of various designs, size and quality.

Exports.—To Punjab, Central India, Central Provinces.
Number not known.

5.—Oil Pressing.

Kinds of oilseeds.	Outturn in mds.	Local use.		Export.	
		For crushing.	For other purposes.	Place of consignment.	Quantity.
		Mds.	Mds.		Mds.
Sesamum...	248,894	115,620	4,000	Cawnpore, Bombay, Dehra Dun and Allahabad.	129,274
Rapeseed...	4,442	1,500	200	Agra and Karvi	2,742
Linseed ...	97,443	28,905	100	Cawnpore, Bombay and Calcutta.	68,438
Mahwa seed	175,000	80,000	Nil	Cawnpore, Bombay, Calcutta and Agra.	145,000
Cotton seed	64,915	...	36,063	Punjab ...	28,852

Household industry.

Number of persons employed.—Actual workers: Males 1,700, females 1,613.

Partially agriculturists: Males 455, females 185.

Kinds of oils and oil cakes produced.—

		Oils, Mds.	Oil-cakes, Mds.
Sesamum	... ..	38,540	77,080
Linseed	.. ..	9,635	19,270
Rapeseed	... ..	500	1,000
Mahwaseed	... ..	9,635	19,270
Wages	... ..	Re. 0-8-0 to Re. 0-10-0 per day.	

6.—Other industries connected with edibles.*Bundelkhand Dairy, Jhansi.—**Owner's name.—*Babu Surendranath Chowdhery.*Year.—*1921-1922.*Number of cattle in the dairy.—*

		Dry.	Milching.
Cows	... ..	50	50
Buffaloes	... ..	7	6

*Amount of milk produced.—*1,440 maunds of milk annually.*Amount of milk purchased by the dairy.—*1,440 maunds annually for cream and butter-making purposes.*Amount of butter produced.—*108 maunds annually.*Prices.—*Milk 6 seers for a rupee, butter Re. 1-2-0 per lb.*Export of butter.—*80 maunds.*Consumption of the dairy in a year.—*

Grass	... ..	11 lakh puras.
Oil-cake	... ..	720 maunds.
Bhusa	... ..	300 ..
Karbi	... ..	400 ..
Barley	... ..	90 ..

Machinery.—

2 Alfa cream separator, capacity 33 gallons.

2 Champion churns, capacity 6 gallons.

2 butter workers.

1 chaff cutter.

7.—Textiles.

A (1). COTTON AND COTTON FABRICS.

I.—Statement showing production and disposal of kapas.

Annual outturn of kapas.	Export of kapas for ginning purposes.	Quantity of kapas ginned by the Mau factory.	Quantity of kapas ginned by hand.	Total quantity of cotton obtained from ginning either by hand or by mill.	Export of cotton.	Local consumption.		Imports.
						For spinning.	Other purposes.	
Mds. 104,106	Mds. 15,000	Mds. 18,865	Mds. 84,007	Mds. 82,457	Mds. 4,455 Bombay and Cawnpore.	Mds. 10,598	Mds. 17,404	Mds. 8,266 from (1) Samthar, (2) Timangarh, (3) Khania Dhanis. (native states and jagirs.)

II.—Statement showing number of persons engaged in weaving and allied industries.

Actual workers.	Males.	Females.
400 families of Kustas in Jhansal proper.	7,116	5,587 (Koria).

III.—Statement showing consumption of yarn and outturn of cloth.

Consumption of yarn.		Outturn of cloth.	Wages.	Imports of cloth.
Local.	Imported.			
Mds. 13,248	(27,150 mds. or 5,430 bales of 5 mds. each.	Kuabtas turn out cloth to the value of 2 lacs annually. Kori weavers turn out 42,857 mds.	Kuabta family earns Rs. 8) a month. A Kori family earns Rs. 28 per month.	To the value of Rs. 30,72,650 annually for local consumption.

(ii) Dyeing of kharwa.—

Annual outturn of kharwa.—1,200 bales of kharwas each of 60 ekris,

Exports.—To Agra, Calcutta and Rajputana.

Local use.—At least half of the produce is utilized in Bundelkhand.

Labour.—24 families of Sunkar, 30 families of Kundigar.

Wages.—Rs. 20 to Rs. 25 Sunkar family, Rs. 25 to Rs. 30 Kundigar family.

Profits of manufacturers —Rs. 4 to Rs. 5 per bale.

(iii) *Dyeing of Kasbi.*—

Number of persons engaged.—2,000 Kori families.

Annual outturn.—258,000 kasbis.

Exports.—To Rajputana, Agra, and in the district of Bundelkhand.

Wages.—Re. 0-12-0 to Re. 1 per day.

(iv) *Calico-printing.*—

Number of persons employed.—100 families at Mau, 11 families at Lalitpur.

Annual outturn.—To the value of Rs. 80,000.

Exports.—To Rajputana, Datia, Gwalior, Tehri States, and other districts of the Jhansi division.

Wages.—Rs. 25 to Rs. 30 per family on an average.

Ginning.—

Ginning factory at Mau owned by Rai Ganga Prasad Sahab. The factory has 44 gins each dealing with 9 maunds of kapas per day of 10 hours, but only 33 are working at present. It has a steam engine of 28 H. P.

Amount of kapas ginned.—13,365 maunds kapas ginned.

Number of working days.—1½ months—January and first fortnight of February.

Remarks.—

(a) The factory has no press at present but the owner is thinking of setting up a hydraulic press.

(b) The factory charges 8 annas a maund for ginning while the hand-ginners charge Re. 1-8-0 to Re. 1-12-0 per maund.

B. WOOL.

(a) *General.*

Annual production.—1,687 maunds.

Imports of wool.—1,950 maunds.

Exports of woollen yarn.—3,637 maunds of raw wool in the shape of woollen yarn 2,912 maunds.

Local consumption of wool.—100 maunds (50 maunds by local carpet weavers and 50 maunds by a factory).

Number of workers of carpet-weaving.—24 families of carpet weavers.

Annual outturn.—240 carpets and 360 asans (prayer mats).

Local use.—All the finished product sold locally.

(b) *Govind Dass Jagannath carpet factory, Jhansi.*

Year.—1921-1922.

Amount of raw wool consumed yearly.—50 maunds at Rs. 25 a maund.

Machinery.—11 carpet looms worked by hand.

Labour.—12 carpet weavers paid at Rs. 27 a month, 4 carders at Rs. 4 per maund and 60 women spinners at Re. 0-2-6 for 1½ seers of wool.

Amount of finished product turned out yearly.—264 carpets 7' × 4' and 480 asans (prayer mats).

Prices of the finished product.—Rs. 18 to Rs. 30 per carpet according to size, weight and quality Rs. 2-8-0 to Rs. 5 per asan.

Remarks.—Aniline dyes are used for dyeing the woollen yarn.

The designs are very simple, such as—

(1) Makhmal, a field of one colour with a centre medallion.

(2) Phulwar.

(3) Panchrangwa.

CHAPTER V.

DIRECTORY.

1.—List of Bank.

Allahabad Bank, Limited, branch at Jhansi.

2. List of Khas contractor.

Seth Ratan Lal of Jhansi.

3.—List of important centres of shoe-making.

1. Mau.
2. Chirgaon.
3. Lalitpur.
4. Jhansi.
5. Moth.

4.—List of shoe-factories in the Jhansi city.

1. Abdulla Shoe Factory of Messrs. Abdulla and Sons.
2. Nyaz Ahmad Shoe Factory of M. Nyaz Ahmad.
3. Tirmizi Brothers Factory of M. Mohammad Kazim.
4. Dennet Shoe Factory of Mr. H. B. Dennet.
5. Sheopal Shoe Factory of Mr. Sheopal.
6. Sadar Bazar Shoe Factory of L. Ram Krishna.

5.—List of firms who advance yarn and gold-thread to Kushta weavers.

1. Chhotey Lal Jagannath.
2. Jagannath Gopal Dass.
3. Jagannath Ramnath.
4. Raghunath Dass Babulal.

6.—List of important firms dealing in Kharwa at Mau.

1. Saintulal Buddbulal.
2. Janki Prasad Narain Dass.

3. Pura Dass Dharam Dass.
4. Ganesh Prasad Kunjilal.
5. Ganga Prasad Motilal.
6. Paltu Ram Mulehand.
7. Deokinandan Ohhakilal.
8. Soni Ram Laohhman Dubey.

7.—List of firms dealing in Alizarine dye required for the dyeing of Kharwa at Mau.

1. Mithan Kanchan.
2. Kallu Guttal.
3. Nathu Ram.

8.—List of shops dealing in Kasbi at Ranipur.

1. Manikchand Singhai.
2. Kamta Soni.
3. Hazarilal Manganlal.
4. Phundilal Singhai.

9.—List of important manufacturers of Calico printed cloth at Mau.

1. Dhani Ram.
2. Narain Dass.
3. Nanhu Chhipi.
4. Govind Dass.

10.—List of cloth shops.

1. Padamlal Jagannath, Jhansi.
2. Sadho Ram Kanhaiyalal, „
3. Rajmal, „
4. Ghanshyam Das Mudgil, „
5. Chandmal, „
6. Bedichand Makhantal, „
7. Ramnath Jaganath.
8. Kallu Gutai, Mau.
9. Mangal Dass Mangaliya, Mau.
10. Nathu Ram Chowdhry, „
11. Nathu Pariya,

12. Achru Lal Dubey, Mau
13. Mangaulal Baroniya, "
14. Pryagdass Dinanath, "
15. Chingal, Katare.
16. Sukhlal Mohanlal, Lalitpur.
17. Sukhlal, Lalitpur.
18. Sunderlal, Chirgaon.
19. Ajudhia Prasad, Chirgaon.
20. Lalain, Moth.

11.—List of yarn shops.

1. Ganga Prasad Govind Dass, Jhansi.
2. Ram Dayal Seth, "
3. Gaya Prasad Seth, "
4. Khannumal Pannalal, "
5. Ramdayal Jankidass, "
6. Chhoteylal Jagannath, "
7. Jagannath Gopal Dass, "
8. Soni Ram Lachman Dubey, Mau.
9. Kedarnath Seth, "
10. Ramlal Tamaira, "
11. Makundi Vaidya, "
12. Hussain Firmohammad, "
13. Abdulghani, "
14. Abdul Fazil, "
15. Debidass Chhaddamilal, Ranipur.
16. Arku Girdhar Vaidaya, "
17. Ajudhiya Chooda, "
18. Kampta Soni, "
19. Chhatarbhuj Soni, "
20. Bhagwan Dass, "
21. Chhaki Barsainyan, "
22. Sukhlal Mohanlal, Lalitpur.
23. Deoki Nandan, Chirgaon.

12.—List of exporters of woollen yarn.

1. Narain Dass Ram Prasad, Jhansi.
2. Nanhumal Chotteylal, "

3. Jagannath Govind Dass, Jhansi.
4. Basdeo Harakchand Kothari, „
5. Ramcharan Sutliwala, „
6. Johnson & Co., „
7. Rahmatullah, „

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Kheri District

By

B. K. GHOSHAL, M. A

4



ALLAHABAD

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CHAPTER I.

INTRODUCTION.

1. General features.

The district of Kheri is the largest in Oudh and occupies the extreme north-west corner of the province. In its general aspects the district is a vast alluvial plain, covered in the northern half with wide stretches of forests and scored with the channels of numberless rivers and water-courses. The land near the Chauks and other rivers is liable to be flooded.

2. Boundaries.

The district is bounded on the east by the district of Bahraich from which it is separated by the Kauriala river, on the south by the Sitapur and Hardoi districts, on the west by Shahjahanpur and Pilibhit districts, and on the north by the territory of the Nepal.

3. Rivers.

The rivers are the most important characteristic of the district. There are two main systems—the Gumti system which consists of the Gumti, the Sukheta, the Katna, the Purai and the Sarayan; and the Ghagra system which consists of the Kewani, the Ul, the Chauka or Sarda, the Dhawar, the Suheli, the Mohan and the Kauriala.

The Chauka is the most dangerous of all the rivers and changes its course continually. It is navigable and has been bridged by the Rohilkhand and Kumaun Railway near Palia. No other river is used for navigation.

4. Lakes and tanks.

A very large area, about 6 per cent. of the total, is covered by jheels, specially in the Nighasan tahsil. Very few of these are used for irrigation in the Ganjar or lowlands. The important jheels are those of Palia Gumchini, Mahmudabad, Sikan-drabad, Ramia Bihar, Tirkulia Dharampur, Nighasan, Pohia, Pateria and Jabda.

5. Canals.

There are no canals existing, but the Sarda Canal will pass through the district and will be very useful for the sugarcane fields.

6. Forests.

The forests of Kheri are the most important in Oudh and produce very good sal timber. Forest area comprises greater part of Nighasan tahsil and much over the Bhira and Kukr-Mailani parganas, while patches are found on the banks of the Kuthna and Gumti rivers in the south of the district. The forests are being worked for sal timber only. Difficulty of transportation is not much as the railway line has passed through the heart of the forests. The Government forest are administered by the Forest department and every year selected patches of trees are felled and the cleared patches are replanted with trees. The private forests are not scientifically worked and entire areas are cleared off and used for agriculture.

7. Groves.

Besides the forests there are numerous mango and mahua and babul groves.

8. Minerals and other products of the soil.

Up till now no important mineral has been found to exist in the district. Kankar is available in Golagokarannath and kankar lime is made from Silia kankar available there. The district is poor in kankar, and this is responsible to some extent for the absence of metalled roads. Reh is found at several places, but is not used except by the village Chamars.

9. Industries.

The district is rich in raw materials, but nature's bounty has not been supplemented by human efforts and the district has very few industries.

The manufacture of metal utensils at Oel and Kaimbars is the most important industry; weaving comes next, but is localized at Kheri only. At Sasiaganj or Sahebganj the Salvation Army have opened a settlement of the criminal tribes and are training the men to weave cloth on the Salvation Army automatic looms.

There is another very important industry—the manufacture of sugar by the Khandasari process at several places in Mahumdi and Lakhimpur tahsils, but the industry is not within the scope of our enquiry.

Saltpetre was important in the past, but at present there are only two small refineries. This industry is in a precarious condition due to foreign competition.

There are no power mills working. Mr. Caxton of Wesleypur grant is setting up an oil and flour mill.

The Raja Saheb of Mahewa is setting up an up-to-date sawmill at Mahewa, but the project does not seem to have been undertaken on sound lines.

Some catechu or khair is manufactured in the crude manner by Khairahas in Nighasan tahsil. The biggest supply of khair comes from Nepal forests.

Very good honey and wax is available, but needs to be in better hands. The method of collection is not organized and no regular supply of genuine things is possible under the present circumstances.

Lac is available from pipal and dhak trees. Contract is usually given for five years and the contractors tie "seed" of lac on the trees which spreads out in one to two years' time. Enough lac is available in the forests without culture. The Singhai estate is trying to culture lac on the dhak trees.

A few years ago sandal oil distillers used to come to Nighasan tahsil with their "degs," etc., and used to set up works at Bheera Kheri and Palia where cheap fuel is available. This idea was good as fuel is the most important item in the distillation of sandal oil. But no such workers are seen these days, and this may be due to the setback in the sandal oil industry at Kanauj.

10. Trade.

Lakhimpur and Golagokarannath have big markets. Gola is the centre for gur and grain, while Lakhimpur is the centre for cloth and oilseeds. There are about 90 shops of mill-made cloth dealers at Lakhimpur alone and about 30 lakhs worth of cloth is annually disposed of there.

Lakhimpur market supplies cloth to the retail dealers of Sitapur, Shahjahanpur, Pilibhit and Bahraich districts.

Lakhimpur merchants sell at Cawnpore rates because of the absence of octroi on cloth. Gola has also a large number of shops of cloth on account of the numerous fairs that are held there in connection with the Shiva Temple. Besides these two big centres, Palia, Ramnagar and Chandan Chauki are big exporting centres and get their supplies from Nepal territories. The markets get a large supply of oilseeds, ghee, khair and spices from Nepal.

11. Roads.

I.—Metalled Road—Provincial.

Length in miles.

Lucknow, Sitapur and Shahjahanpur Road... 17

II.—Metalled Roads—Local.

Lakhimpur to Shahjahanpur	...	...	8
Lakhimpur to Sitapur	...	...	12
Lakhimpur to Singhai	...	...	5
Gola Station to Aliganj	...	...	1
Golagokarannath to Mahumdi	...	...	21
Lakhimpur to Kheri	...	...	4

III.—Unmetalled Roads.

Lakhimpur to Gola	...	...	20
Lakhimpur to Singhai	...	...	20
Lakhimpur to Chaparthala	...	...	33
Lakhimpur to Khairigarh	...	...	31
Lakhimpur to Pilibhit	...	...	37
Lakhimpur to Bahraich	...	...	10
Lakhimpur to Dhaurahra	...	...	19
Mahumdi to Pasgawan	...	...	12
Mahumdi to Aurangabad	...	...	16
Mahumdi to Pawayan	...	...	6½
Aliganj to Bijua	...	...	12
Gola to Palia	...	...	28
Gola to Khutar	...	...	12½
Gola to Sitapur	...	...	25
Palia to Nighasan	...	...	45
Singhai to Kharigarh	...	...	5

12. Ferries.

Tahsil Nighasan.

- River Kauriala* ... Manjhra, Bathanwa, Shitaba, Matera, Sujayli, Zalimnagar, Thatwa, Ganapur, Chandauli, Singavar, Bela and Kabraha.
- River Sarju* ... Ghazipur, Bairia, Dhaharwa, Bangalia, Lalpur.
- River Chauka* ... Sirsi, Pachperi, Talia Kunda, Muria Mahadeo, Mainaha, Urra, Dulamau, Maharia, Kachlaha, Mundi, Gangolia, Sakhetu, Aira, Reharis, Patwara, Srinagar, Khamaria, Kherchans, Kataia and Narausa.
- River Ghagra* ... Khamaria.
- River Hardhua* ... Chak Naithu and Amethi.
- River Dahawar* ... Narupur and Dhobighat, Ranjiganj, Naurangpur, Sadhwapur, and Godpurwa.

Tahsil Lakhimpur.

- River Old Chauka* ... Maksoha, Chapehdi, Pasia, Daudpur, Nangaza, Sarsawa, Reharis.
- River Ghagra* ... Mahola.
- River Ul* ... Bednanpur, Kamalhia, Takia Ghat, Banwaripur, Barhaghat, Bilahri, Rehna, Dumohani, Katkuma, Kirtiapur, Pipri, Nakha and Manvapour.

Tahsil Mahumdi.

- River Kathna* ... Chaituwa, Jannaghat, Norwa, Aliapur, Kathnaghat, Wailighat, Chailia, Bhadaria, Usri and Biana.

River Gumti ... Madher, Maina, Sandori, Purena, Marwa, Marhighat, Barehti, Pipraghat, Mahadeoghat, Bhetia, Marena, Kotla Kandu, Alia-pur and Kotlia.

13. Markets.

Tahsil Lakhimpur.

Name of market.	Days.
Kheri ...	Wednesdays and Saturdays.
Dhakwa ...	Ditto.
Oel ...	Sundays and Thursdays.
Sidhauna ...	Ditto.
Saidapur ...	Ditto.
Bhira Ghasi ...	Tuesdays.
Dhaurahra ...	Sundays and Wednesdays.
Kaimabra ...	Tuesdays and Saturdays.
Bargadia ...	Mondays and Thursdays.
Mahewaganj ...	Mondays and Fridays.
Lakhpera ...	Tuesdays and Saturdays.
Phulbihar ...	Sundays and Wednesdays.
Baragaon ...	Ditto.
Atkohna ...	Sundays and Thursdays.
Mailani ...	Ditto.
Kukra ...	Tuesdays and Fridays.
Munda Khurd ...	Ditto.
Bijua ...	Mondays and Thursdays.
Rasulpanah ...	Ditto.
Baragaon ...	Mondays and Fridays.
Aliganj ...	Tuesdays and Saturdays.
Paila ...	Ditto.
Rampur Gokal ...	Ditto.
Karanpur ...	Sundays and Wednesdays.
Nimgaon ...	Sundays and Thursdays.

Tahsil Mahumdi.

Mahumdi ...	Sundays and Thursdays.
Pasgawan ...	Ditto.
Mullanpur ...	Ditto.
Uchaulia ...	Tuesdays and Saturdays.
Bhanpur ...	Tuesdays and Fridays.

Name of market.	Days.
Magdapur ...	Wednesdays and Saturdays.
Piparia ...	Sundays and Wednesdays.
Mitauli ...	Tuesdays and Fridays.
Kaimahra ...	Mondays and Fridays.
Haidarabad ...	Sundays and Thursdays.
Gola ...	Ditto.
Raipur ...	Ditto.
Kotwara ...	Mondays and Fridays.
Amethi ...	Wednesdays and Saturdays.

Tahsil Nighasan.

Palia ...	Wednesdays and Saturdays.
Tirkaulia ...	Mondays and Thursdays.
Nighasan ...	Tuesdays and Saturdays.
Dalbapur ...	Ditto.
Simri ...	Sundays and Wednesdays.
Tirkaulia ...	Ditto.
Tilhar ...	Mondays and Thursdays.
Singhai ...	Ditto.
Sheikhupur ...	Sundays and Wednesdays.
Saimasa ...	Mondays and Thursdays.
Isanagar ...	Tuesdays and Fridays.
Narsinghpur ...	Wednesdays and Saturdays.
Kafara ...	Tuesdays and Saturdays.
Dulhi ...	Ditto.
Dhaurahra ...	Mondays and Fridays.
Unchagson ...	Ditto.
Ramia Bihar ...	Ditto.
Keshwapur ...	Sundays and Wednesdays.
Gularia ...	Ditto.
Matera ...	Ditto.
Phariapur ...	Ditto.

14. Fairs.

Tahsil Lakhimpur.

	Date.
Dasehra Fair of Lakhimpur ...	Kuar Sudi 1st to 10th.
Bhiryan Fair of Salempur ...	1st Sunday of Jeth Sudi.

Tahsil Mahumdi.

	Date.
Dasehra Fair of Mahumdi	Kuar Sudi 1st to 10th.
Mahadeo Fair of Ghazi- pur 	Baisakh 'Amawas.
Ram Lila of Aurangabad	Kuar Sudi.
Dasehra of Bahadurnagar	Jeth Sudi 10th.
Chaiti Fair of Gola ...	March.
Sheoratri Fair of Gola ...	February.
Ram Lila of Gola ...	Kuar Sudi.

CHAPTER II.

RESOURCES.

1. Agricultural produce.

Products of the rabi harvest.

The crops are harvested by the end of March and the supplies begin to come to the market in April. The business of sale and purchase is very brisk till the end of June for export trade as early shipments of wheat and barley to Europe fetch a higher price. The European supplies are exhausted by that time and the American and Canadian supplies come later still.

(1) *Wheat.*

Area cultivated.—186,620 acres.

Outturn.—2,052,820 maunds.

Export.—1,000,000 maunds.

Prices—

First quality 10 to 10½ seers per rupee.

Second quality 10½ to 11 seers per rupee.

Export duty.—Free, but owing to higher prices after the war free export was restricted. The restrictions are still enforced, but the terms of restriction vary from time to time according to the state of the Indian market.

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.

The unit of sale is the maund of 82 lbs. and shipments are made in bags of 2 maunds each. The Corn Trade Association of England regulates the quality of the exports and allows only 2 per cent. of other food grains in every consignment meant for England.

(2) *Barley.*

Area cultivated.—119,214 acres.

Outturn.—1,549,783 maunds.

Export.—900,000 maunds.

There is not much of foreign export as there is enough demand in the country.

Prices—

First quality 17 to 17½ seers per rupee.

Second quality 18 to 25 seers per rupee.

Export duty.—Free.

Import duty.—Free in England, Belgium and Holland, 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 is the maund of 42 seers, and it is packed in gunny bags of 2 maunds or 184 lbs.

(3) *Gram.*

Area cultivated.—140,885 maunds.

Outturn.—1,702,620 maunds.

Export.—About 850,000 maunds.

Prices—

First quality 17 seers per rupee.

Second quality 18 to 20 seers per rupee.

Export duty.—Free.

Import duty.—Free every where, except in Germany 18 per cent. and Japan 16 per cent.

The unit of sale is the maund of 42 seers and shipments are made in bags of two standard maunds.

Karachi is the main port for the export of wheat and gram as its harbour is protected against the monsoon.

Karachi merchants allow 3 per cent. discount in their consignments.

(4) *Peas.*

Area cultivated.—1,438 acres.

Outturn.—11,504 maunds.

(5) *Poppy or opium.*

Area cultivated.—477 acres.

Outturn.—2,565 maunds of poppy seed.

Export.—1,300 maunds.

Prices.—Four seers 10 chataks to 4½ seers per rupee.

Export duty.—Free.

Import duty.—Seed is imported free everywhere, except Germany 6 per cent.

The "white" variety is commonly grown. The crop is grown for opium under Government supervision. The entire

quantity of crude opium produced is purchased by the Government and is refined at Ghazipur Factory. The cultivation has been reduced of late.

The seed is used as food in India and very little oil is prepared, although the oil is very good for artificial butter, paints and varnish.

(6) *Tobacco.*

Area cultivated.—2,504 acres.

Outturn.—17,528 maunds of leaf.

Export.—About 5,000 maunds.

Locally used.—10,000 maunds for smoking tobacco. The leaf is not exported outside the country.

Prices.—Rupees 10 to Rs. 13 per maund ordinary. Maghi variety Rs. 15 to Rs. 18 per maund.

(7) *Linseed.*

Area cultivated.—6,473 acres.

Outturn.—38,838 maunds.

Export.—35,000 maunds.

Prices.—5½ seers per rupee for the common quality containing 36 seers of linseed and 4 seers of impurities in a consignment of one maund. The purer the quality the higher the price.

Export duty.—Free.

Import duty.—Free in all countries, except Italy 18 per cent.

Most of the seed available is exported to Europe and the local prices depend upon foreign demand. The plant is cultivated for the seed only, although it can be made to yield very good fibre like flax. The oil is very good for paints and varnish.

(8) *Rape and mustard.*

Area cultivated.—9,838 acres.

Outturn.—76,688 maunds.

Locally used.—67,500 maunds.

Export.—About 15,000 maunds. (Some comes from Nepal).

Prices—

Rape seed 6 seers a rupee.

Mustard 6 seers a rupee.

(The seed is all sold out during April and May.)

The sale depends upon the percentage of the "red" variety in a consignment. The common percentage is 60 per cent. yellow and 40 per cent. red, selling at 6 seers a rupee.

This is the most important oilseed of United Provinces, both for local consumption as well as for export.

Products of the kharif harvest.

The harvesting of the crops begins by the end of October and the marketing goes on from November to February. Rice and sugarcane are the important crops of the season.

(1) *Juar.*

Area cultivated.—14,151 acres.

Outturn.—99,057 maunds.

(2) *Bajra.*

Area cultivated.—29,882 acres.

Outturn.—194,233 maunds.

(3) *Rice.*

Area cultivated.—219,889 acres.

Outturn.—2,418,779 maunds.

Export.—1,000,000 maunds.

Export duty.—Three 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.

The unit of sale is the maund and it is packed for transport in bags of 2 maunds.

(4) *Maize.*

Area cultivated.—74,591 acres.

Outturn.—1,118,865 maunds.

It is largely consumed within the province.

(5) *Indigo.*

Area cultivated.—36,781 acres.

Outturn.—25 maunds.

Babu Sita Ram is growing some indigo in his farm at Kukra. It is not grown anywhere else.

(6) *Sugarcane.*

Area cultivated.—36,781 acres.

Outturn.—782,744 maunds of gur.

Export.—About 200,000 maunds of gur.

Export duty.—Free.

Import duty.—18 per cent. United States of America.
Free elsewhere.

Sugarcane is crushed in iron kolhus obtained on hire from the dépôts of the merchants in the sugar-growing regions. The juice is boiled in pans which are also obtained on hire. Sugar is made from rab in the khandsars. Gur of Golagokarannath side is yellow and is edible. It is very much in demand in Guzerat. Gur is made into bhelis or blocks and is wrapped in gunny cloth for export.

(7) *Til or Sesamum.*

Area cultivated.—2,170 acres.

Outturn.—8,680 maunds.

Export.—2,000 maunds.

Export duty.—Free.

Import duty.—Germany 6 per cent., Italy 16 per cent.
Russia 10 per cent. Free in the other countries.

The seed is used as food as well as for crushing oil out of it. The oil is used as the base oil for scented hair oils and is largely mixed with ghee. It is used for making artificial butter in Europe. The black variety is commonly grown, but the white variety is more valuable. It is shipped in bags of 2 maunds.

(8) *Groundnut.*

Area cultivated.—1,068 acres.

Outturn.—10,680 maunds.

Export.—4,000 maunds.

It is used as food as well as for oil. The oil is mixed freely with ghee.

(9) *Sasai.*

Area cultivated.—1,231 acres.

Outturn.—9,008 maunds at 600 lbs. per acre.

Export.—1,500 maunds.

Prices.—Rupees 16 to Rs. 18 per maund.

It is not exported out of the country. The fibre is largely used for rone and tat-patti making in the district. It is grown as a mixed crop with arhar and also on the border of fields as protection against animals.

Bhang or sann hemp (Cannabis Sativa).—This plant grows wild in the Ganjar, but no use is made of the excellent fibre that it can produce. For fear of excise restrictions it is not cultivated, but its cultivation should be encouraged not for the drug but for the fibre and for fertilizing the soil. It enriches the soil on which it grows by the absorption of nitrogenous matter in its root.

(10) *Vegetables and fruits.*

The district is very poor in fruits and vegetables.

Potato.

Area cultivated.—1,031 acres.

Outturn.—61,860 maunds.

2. Forest resources.

The forests of the district are rich in sal timber which is the main source of revenue. The Forest department has devoted all its attention to timber and the minor resources have never been properly worked up. For timber they select particular groups of trees and those groups or plots are sold by auction. The contractors are required to fell the trees and remove the timber within a fixed period. A light railway passes through the heart of the forests making communication easy. There is a list of forest products, but no effort has been made to ascertain the quantity available for commercial purposes without which such lists are useless. Scientific research must be conducted with a view to commercial exploitation. The minor products are being wasted as the petty contractors do not venture into the heart of the forest in quest of them.

The private forests are being cleared one after the other. This is objectionable. The forests are a source of revenue as well as rainfall, and instead of clearing off forests useful trees should be planted on waste lands. The Government department of Forest plants useful trees like teak, haldu, shisham and sirsa in the cleared plots.

Forests can supply timber, wood for matches, drugs, chemicals, dyes, tanning material, paper pulp, wood tar, etc., if properly worked.

Sawmills are wanting in the district. It would be better if portable sawmills could be introduced to fell trees and saw them on the spot.

For administrative purposes the forests of the Kheri district have been divided into two divisions—North Kheri and South Kheri. The river Chauka forms the dividing line. Timber of North Kheri is of superior quality.

The following statement will give an idea of the forest resources as worked at the present time :—

North Kheri.

	Sq. miles.
(i) Total area of reserved forest ...	295
(a) Area closed to grazing to all animals ...	208
(b) Area open to grazing to all animals ...	45
(c) The number of animals that grazed during 1922-23—	
5,232 buffaloes.	
1,895 goats.	
769 sheep.	
72 ponies.	
1,895 goats.	

(ii) Revenue from forest products.

No.	Name of product.	No. of trees.	Cubic feet of wood.	Value.
				Ra.
1	Sal ...	58,141	491,000	12,25,625
2	Shisham ...	...	4,000	6,000
3	Asna ...	29,884	300,000	3,75,000
4	Miscellaneous, including semal and others ...	...	46,000	13,125
5	Haldia ...	...	9,170	5,625
6	Chanjan ...	1,705	2,000	1,250
7	Fuel ...	...	2,136,000	3,50,132
8	Thatching grass ...	...	...	3,164
9	Hides ...	...	...	1,095
10	Honey*	...	...	150
11	Khas*	...	...	20
12	Nahua*	Not tapped	...	...
13	Medicinal plants and shrubs*	Ditto	...	...

* Minor products which are capable of giving good revenue, but are not being properly worked.

South Kheri.

	Sq. miles.
(i) Total area of reserved forests	... 165
(a) Area closed to grazing	... 115
(b) Area open to grazing	... 50
(c) Number of animals that grazed during 1922-23—	
1,892 buffaloes.	
6,513 cows.	
104 other animals.	
(ii) Revenue from forest products.	

No.	Name.	Cubic feet.	Value.
			Rs.
1	Sal	78,611	75,454
2	Shisham	340	
3	Asna	104	
4	Miscellaneous*	18,797	
5	Fuel	392,704	
6	Baib grass (area 141 sq. miles)	38,540 maunds...	35,420
7	Thatching grass	49,880	2,465
8	Hides	35 hides	90
9	Honey and wax	6 munde	70
10	Mahua	75	282

* Includes sissu, sandan, semal, amaltes, jigan, haldn, kaim, neora, jaman, siris, bahera, bhillaour, and bargad.

Honey and wax.—Honey is available in large quantities. It is usually collected from hives on trees. Hives are also set up by bees underground. Honey is collected by Kanjars or Kuchbandhias and Pasis. The system of collection is most imperfect. The Pasis try to steal honey from hives in forest. Usually the zamindars and the forest authorities auction the right to collect honey. The contractors ask the Kanjars and Pasis to collect honey and pay half of the produce to them. The Kanjars usually sell the other half to the contractors and take ready money. The revenue obtained from this source is small as compared to produce. The Kanjars bring their produce to banias in the markets as well and the banias collect honey and export in kerosine oil tins,

The hive after extraction of honey is melted and discs of yellowish bee's wax are produced by Kanjars. These are also sold to banias and contractors.

Honey is collected during winter months. No exact figures could be obtained, but approximately about 300 maunds is easily available. The various estates of the district get about Rs. 2,600 as royalty for honey and wax.

Prices—

Honey Rs. 15 to Rs. 20 per maund.

Wax Re. 1-5 to Re. 1-6 per seer.

Lac.—There is no systematic cultivation of lac in the district, although a fairly large amount is collected from pipal and dhak trees. It is an animal product formed by insects that infest the trees. The right to collect lac is sold by zamindars to contractors. Lac is collected twice a year in May and October. It is collected by dealers in markets and exported to Mirzapur. A little crude lac is used in the district by Manihars.

About 1,500 maunds was collected last year.

Lac culture has been undertaken by the Singhai estate. Insects or "seed" have been tied to dhak trees by contractors who have taken lease for five years, and it is expected that a considerable amount will be produced from next year.

The supply of lac is very fitful and so is demand which depends upon foreign markets. Lac cultivation is not expensive and can bring a revenue of Rs. 60 to Rs. 80 per maund of lac produced. Lac culture should therefore be encouraged. The demand for shellac is increasing in the country and with it fluctuations will decrease.

3. Animal resources.

Cattle census.

Bulls	...	...	...	1,137
Bullocks	...	...	...	221,756
Cows	...	...	...	308,558
Calves	...	...	...	219,267
Buffaloes	...	...	...	65,593
She-buffaloes	...	...	...	88,670
Calves (buffalo)	...	...	...	69,880

Sheep	...	...	...	50,972
Goats	...	...	...	83,108
Horses	...	...	...	5,587
Mares	...	...	...	5,961
Colts and ponies	...	...	...	2,471
Mules	...	...	...	95
Asses	...	...	...	976
Camels	...	...	...	29

Bulls and bullocks of Kheri are of a better breed than those of the rest of Oudh, but breeding is not scientifically managed and the good Parihar breed can be had on the outskirts of the district only. The zamindars hold big herds, but cannot control them. The animals are semi-wild and cause much damage. There is a cattle-breeding farm at Manjhia of the Agricultural department.

Wool.

Estimated production from 50,972 living sheep.—76,458 lbs. or 932 maunds per annum—three shearings.

Estimated production from skins of 2,000 sheep.—12 maunds.

Amount locally used.—7,400 lbs. or 90 maunds.

Exports.—854 maunds estimated.

Prices.—Rupees 16 to Rs. 18 per maund.

Kheri wool is not very bad, but the quantity is not much. It is used in jails for blanket-making.

Hides and skins.

Hides from animals slaughtered in recognized slaughter-houses.—2,738 hides.

Others, including dead and those privately slaughtered.—20,000 hides.

Hides locally used.—10,000 hides.

Exported.—19,000 hides.

Prices.—

Framed cow hides Rs. 60 to Rs. 70 per maund.

Sun-dried cow hides Rs. 30 to Rs. 40 per maund.

Framed buffalo hides Rs. 35 to Rs. 40 per maund.

Sun-dried buffalo hides Rs. 22 per maund.

Eight to 10 cow hides weigh about a maund and 4 to 5 buffalo hides weigh about a maund.

Lakhimpur hides are light and sun-dried and fetch comparatively low rates. This is due to defective flaying and emaciated condition of the cattle.

Export duty.—5 per cent.

Import duty.—Raw hides free everywhere.

Mahumdi and Lakhimpur are important centres for hides and skins, but a large amount is exported from the various railway stations. The hides are called "Agras" or "North Westerns" for export and are usually classed as "Dead" or "Rejections."

The hides are classed as follows according to quality :—

- (1) Slaughtered: those without brand or yoke marks. They are usually hides of slaughtered animals. The best among slaughtered are marked C—a term derived from the hides of the animals of the Government Military slaughter-houses under the Commissariat.
- (2) Dead: with minor faults like cuts, etc.
- (3) Rejections: light hides with permanent marks and cuts.
- (4) Double and treble rejections: very light and damaged hides.

The unsettled state of Germany—India's best customer—has caused a slump in the market, which is continuing. The prices are low. A tannery can be set up here to utilize the raw hides.

The unit of sale locally is the Kori of 20 hides and for export the maund. They are shipped in bales of 40 to 50 buffalo hides and 100 to 200 cow hides.

Skins.

Skins of sheep and goats slaughtered in the recognised slaughter-houses.—8,815 skins.

Skins from animals privately killed—35,000 skins.

Exports.—40,000 skins.

Prices.—12 annas to Re. 1-4 each according to size and condition of the skin.

Export duty.—5 per cent.

Import duty.—Free everywhere.

Goat skins are in demand always. They are collected by Biyoparis in the district, treated with salt and sent to Cawnpore and Lucknow where they are either "dry salted" or put in barrels of salt solution and sent to the ports.

Goat skins are sent mostly to America and France where they are tanned into the famous glace kid leather. The skins are classed according to size. The best skins called Heavy are 36" to 40" long and 21" to 23" wide. Sizes smaller than 25" are called kid skins.

Unlike hides which are common in the winter, skins are in abundance during the summer season and require careful treatment with salt.

America was trying to use Canadian supplies and her demand has not yet come up to the normal, but there are signs of the resumption of the normal demand in the immediate future. It is a pity that no effort has yet been made to tan glace kid in India.

Bones.

A large quantity of bone is available from the dead and slaughtered cattle of the district and bone pickers are always active collecting bones from different places at the open air dépôts of the arhatias near railway stations.

Bones are packed in wagons and usually sent to the Cawnpore Bone Mills at Magarwara, but a large quantity goes to Calcutta as well. Bone-meal is an excellent phosphate manure. At present no other use is made of the available supply, although buttons and handles can successfully be made.

It is estimated that about 12,000 maunds are available from 23,000 animals that die or are slaughtered in a year.

4. Mineral.

Kankar.—Kankar is not found in abundance in the Kheri district as in other Oudh districts. It is found in large quantities only near Golagokarannath. This is called Silia kankar and is good for kankar lime.

Reh.—Area under reh is approximately 302 acres. Reh is found near rivers and dhak and babul jungles and can thus be easily used for tanning.

5. Labour and capital.

There is no scarcity of unskilled labour for the Public Works department, but skilled labour is totally absent from the district. The people are not industrious and are therefore not very prosperous.

There are no banking facilities and there does not exist even a District Co-operative Bank. The mahajans, grain dealers and cloth merchants carry on monetary transactions amongst themselves and advance loans to others as well. There are not many Talukdars in need of money as most of the estates are under the Court of Wards from a very long time.

CHAPTER III.

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

1. Chemicals.

(a) Preparation of crude saltpetre.

Saltpetre or potassium nitrate is obtained out of earth scraped or dug from the vicinity of dwellings and cattle sheds or from old mud walls. This nitrous earth is dissolved in water and filtered. The solution is boiled in iron pans and the residue obtained is crude saltpetre—a reddish brown powder with shining white crystals. This crude saltpetre is sold to the Kothiwalas or owners of refineries at Farrukhabad where it is refined for export.

Organization.—Loniyas prepare crude saltpetre. They have to take a licence from the Salt department on payment of Re. 1. The zamindars sell the right to use nitrous earth of their villages to these Loniyas or mahajans, who sublet the right to the Loniyas. The royalty is fixed every year after bargaining, and there is no fixed basis. The Loniya has to pay one-third of the produce to the zamindar or his mahajan. Crude saltpetre is sold at Rs. 3 to Rs. 4 per maund.

Profit.—The Loniyas are partly agriculturists, and this is a subsidiary source of income. They do not make much profit due to fall in prices, and many Loniyas have given up the work.

A man with a helper using one karhai or pot can produce about 13 maunds of crude saltpetre per season of 2½ months.

Price of 13 maunds at Rs. 4 equals Rs. 52.

Expenditure—

	Rs a. p.
(i) Collection of earth and fuel and miscellaneous charges	4 0 0
(ii) Share to mahajan	17 5 0
(iii) Wages to the helper	15 0 0
Total	86 5 0

This leaves a balance of Rs. 15-11 which is his income for $2\frac{1}{2}$ months.

Season—February to June.

(b) *Refining crude saltpetres.*

The manufacture of saltpetre crystals was an important industry of the district and there were several refineries in the Nighasan tahsil. Most of these refineries used to be managed and owned by Farrukhabad merchants, and even to-day the two kothis at Dhaurahra and Amethi belong to Messrs. Narain Das, Gauri Shankar of Farrukhabad, the centre of saltpetre industry in the United Provinces.

Both the refineries were idle last year (1922-23) on account of fall in demand. China has cut down her demand and the Assam Tea gardens use imported saltpetre.

One maund of crude saltpetre gives about 18 to 25 seers of refined crystals. The price F. O. R. Calcutta was Rs. 9-8 per maund for good crystals, allowing 5 per cent. impurities. For higher percentage of impurity they deduct 2 annas per cent. of impurity from the above price.

In 1921-22, 450 maunds of refined saltpetre and 110 maunds of crude saltpetre were produced at Dhaurahra and 45 maunds at Amethi.

The Salt department controls the production of saltpetre as common salt is a by-product, and licensing fee of Rs. 50 is charged.

The following process is adopted :—

Nitrous earth is dissolved in water in a pit and filtered. In this filtered solution crude saltpetre is added and the saturated solution is then transferred to boiling pans. Salt crystallises fast and is occasionally taken out. The boiling liquid is then passed to earthen tubs or wooden boxes by means of wooden pipes and allowed to crystallise. Crystals are brown and have to be washed afterwards to get colourless crystals. The wash water is boiled and dissolved saltpetre recrystallised.

Organisation.—The proprietor remains at Farrukhabad and his agent conducts the work with the help of ordinary village labourers. Salt obtained in the process of refining is either

sold in the market or thrown into a pond or river and thus destroyed. On whatever salt is sold, the usual salt tax is payable to Government, and experience shows that rarely anything like a profit remains for the refiner.

Marketing.—Calcutta is the principal market for saltpetre. It is used for gunpowder, fire-works and manure. China and Japan used to be our biggest customers, but the competition of Chile saltpetre has practically thrown United Provinces stuff out of the market.

The unit of sale is the maund of 82 lbs. and it is shipped in bags of 224 lbs.

Profit—

	Rs.
Cost of one maund of crude saltpetre ...	4
Expenses of refining ...	1
	—
Total ...	5
	—

This will produce about 25 seers of saltpetre fetching Rs. 6 at Calcutta or Rs. 5-4 locally, leaving 4 annas as profit.

Suggestions.—The industry needs to be saved from total extinction. The use of cordite is throwing it out of the Government Ammunition factories and the Tea gardens are using imported manure.

The railway freight is prohibitive and should be reduced. Further, some arrangement should be made with the Tea gardens for the supply of saltpetre manure which need not be very much refined.

2. Hardware.

Manufacture of domestic utensils.

This is one of the most important industries of the district and Oel and Kaimhara have a good reputation for utensils. They cast utensils from moulds and metal sheets are not used. Utensils of kaskut, phool (bell metal) and brass are made. Usually old utensils are melted and often bars of alloy are used. Bars are imported from Cawnpore.

They make besides cooking utensils, lotas, glass, hukkas, cups, trays, spoons, etc. The workmanship of Kaimhara is good, but the work is on a large scale at Oel where there are two expert workmen as well. At Oel there is division of labour but at Kaimhara the workers have to carry on the various processes themselves.

The process is the same as described in Mr. Dampier's monograph on brass and copper. Metal is melted in the bhatti or furnace and cast into moulds. The earthen moulds are broken, the vessel is put on the lathe and finally finished with oil and sand paper.

About 100 maunds of utensils are prepared every day at Oel, but at Kaimhara the average is of 4 maunds per day only. They work for about 200 days in a year. In melting about $2\frac{1}{2}$ seers of the metal are lost for every maund melted.

Organization.—At Kaimhara in Lakhimpur tahsil and Sikandarabad in Mahumdi tahsil the actual manufacturer or worker is also the dealer, and with the help of the members of his family and one labourer for lathe he carries on all the processes from mould making to finishing. He takes his goods to bazaars and fairs or sells it to pedlers who bring broken utensils to him. Customers also bring broken utensils for barter.

At Oel the work is divided among three classes—mould-makers, manufacturers and dealers in ready made utensils, who are also suppliers of raw material.

The mould-makers prepare the earthen moulds and sell to the manufacturers. The manufacturers are mostly wage earners and prepare things for the dealer out of material supplied by him. They have to use their own moulds, fuel, etc., and have to supply goods equal in weight to the metal given. The loss in melting is covered by wages. Dealers get things made on wages. They keep the workers under control by paying advances. They sell their goods to mofussil merchants.

Profit.—The profit of the manufacturer is usually his wages. He gets a lump sum from dealers and has to meet all expenses, e.g., a lota maker gets 9 annas per seer as wages.

He can produce 22 lotas weighing 24 seers. His wages would be Rs. 13-8 and he will have to pay—

	Rs. a. p.
Loss of metal (Jarti) at $\frac{1}{2}$ pao per seer ...	1 14 0
Price of 22 moulds ...	4 0 0
“ Polekarai ” or filing the mould to the required thickness of the vessel ...	1 0 0
Filing ...	1 8 0
Latheman ...	0 8 0
Fuel ...	1 8 0
Miscellaneous ...	1 0 0
Total ...	11 6 0

This leaves a net profit or wages of Rs. 2-2.

Profit of the dealer—

	Rs. a. p.
Cost of metal at 10 annas a seer ...	15 0 0
Wages ...	13 8 0
Total ...	28 8 0

He will sell the lotas for Rs. 33 and will thus get Rs. 4-8 or $18\frac{1}{2}$ per cent.

Suggestions.—The industry does not suffer much from foreign competition, but lighter vessels of Moradabad and Surat may become a formidable rival. Heavy articles are preferred for cooking vessels only, but for other requirements elegant and light vessels are preferred and the moulds and the lathe should be such as to produce such vessels.

The industry depends upon good harvest and the wages fluctuate with market demand: Wages are high during marriage season.

Co-operative organization will do good to the workers, but it will not be an easy affair as the relations between the dealer and the worker are cordial, the former helping the latter in dull season by keeping them engaged though on low wages.

3. Leather.

(a) Tanning.

Hides and skins are available in large quantities in the district and there is no dearth of tanning materials like reh, babul bark, sal bark, catechu, sonla, etc., but there are no tanneries and only the village Chamars tan some leather in their own way which has been aptly described by one as "turning good hide into bad leather."

The tanners are all agriculturists and carry on tanning as a subsidiary industry for about 8 months. A family can produce ten hides at the most in a month. There are about 650 tanners in the district using about 10,000 hides and 1,000 skins annually. Shankerpur near Mahumdi has 52 tanners.

Organization.—Family is the unit, the members combining to perform the various processes of tanning from skinning to final hanging. They do not usually purchase hides, but depend upon village casualities. They have to supply the villagers with "Charsa" for buckets and the zamindar shoes by way of royalty for the right to take hides of the village animals.

Marketing.—The Chamars utilise the leather themselves or sell to mochis in the markets. Good tanned hides are often collected by merchants in the village markets for export to mofussil towns.

They get Rs. 2 to Rs. 3 per hide as profit in favourable market.

Suggestions.—As already stated there is scope for tanning industry. To export good hides better flaying and curing methods ought to be taught and model cottage tanneries ought to be tried here on the lines suggested by the Calcutta Research Tannery. They can be taught better methods of tanning by temporary schools set up at one or two places in the district.

(b) Leather working.

Lakhimpur is not an advanced district and desi shoes for villagers are the only leather goods made.

Upper leather is of calf and cow hides, while sole is of buffalo hides. Coloured leather for slightly better class of desi shoes comes from Shahjahanpur and Cawnpore.

The mochis are generally agriculturists, except the mochis of Kheri and Mahumdi where there is regular demand. Usual price of desi shoes is Rs. 2 to Rs. 3 per pair. Superior ones made at Mahumdi Kila Rs. 4 to Rs. 5 per pair.

There are about 125 mochis producing about 12,500 pairs annually. A mochi can earn 10 annas to Re. 1-4 a day according to his skill as well as luck in securing customers.

4. Miscellaneous.

(1) *Tobacco*.—Nowhere is good smoking tobacco prepared and the entire produce of the Maghi crop goes to Lucknow. Very cheap smoking tobacco is prepared for local consumption. There are about 150 shops.

They use shira and saji or reh for preparing smoking tobacco. Tobacco leaf is pounded by the men themselves.

Shira is imported from Shahjahanpur. Usually one maund of shira is mixed with one maund of tobacco and 10 seers of saji. These are mixed and water added from time to time. It gives about 3 maunds of smoking tobacco at 3 annas a seer.

About 20,000 maunds of smoking tobacco are prepared annually for which about 7,000 maunds of leaf are used.

(2) *Sirki Pal making*.—"Pal" or covers used for bullock carts and temporary huts are made of sirki obtained from munj. Pals are made by kuchbandhias at many places in the Nighasan tahsil, specially at Isanagar, Samdaha and Jhandi.

A pal is made of two flat pieces each four yards long and 2 yards wide joined together to form a sloping roof. A pal costs 8 to 10 annas each. One family of kuchbandhias can make four pairs a day. They have to pay royalty to collect sirki from the munj fields.

These pals are in demand during summer. About 100 families of kuchbandhias are engaged in this work making about 12,000 pals per season.

(3) *Making of moulds for metal utensils*.—At Oel moulds for metal utensils are made by a different set of people who are not engaged in any other trade. There are 60 families who employ outside labourers as well. Each family has at least three labourers.

The outturn depends upon size.

Prices are—

Batua moulds ...	...	Rs. 50 per 100.
Gagra ,, ...	...	Rs. 40 to Rs. 50 per 100.
Dekchi ...	...	Rs. 10 to Rs. 30 per 100.
Lota ...	...	Rs. 10, Rs. 14, Rs. 16 and Rs. 24 per 100.

He can prepare 100 batua moulds in 12 days. His expenses including labour, would be Rs. 21, leaving Rs. 29 as his profit.

(4) *Catechu*.—Catechu (khair or cutch) is obtained from the wood of the khair tree (*Acacia catechu*) found in many places in the Kheri district. Singhai estate has the largest number of trees. There were no plots in the Government forests before, but now six big plots are ready and one will be sold every year for catechu. This will give a continuous supply. A large quantity is manufactured on the outskirts of the district in Nepal territory.

The zamindars sell the right to cut trees to contractors who employ Khairahas of Gonda and Fyzabad. The Khairahas are not well off and are indebted to these contractors. They take pans and handis and implements for cutting wood along with them and camp near catechu groves. The merchants of Cawnpore and Lucknow finance the Khairahas.

The Khairahas engage hillmen to fell trees. The work continues for 3 months. They fell trees and use the bark and sap wood for fuel. The heart wood is cut into small chips and boiled in the handis or pots fitted in a kiln. The boiling liquid is transferred to two other handis after interval of 3 hours and then poured into a wooden trough for cooling.

When catechu attains the consistency of clay it is transferred to pits the bottom of which contains sand to draw off the remaining moisture. When hardened it is cut into small cubes.

The work continues for 3 months. Forty-five days are taken up in chipping and boiling and the remaining 45 days in drying. The royalty is levied per handi and a handi is supposed to prepare one maund of catechu. The Singhai Estate charges Rs. 10 per handi. Present price of one maund is about Rs. 60.

About 200 maunds were produced in the district yielding a revenue of about Rs. 2,000.

The Khairahas make over the entire produce to the mahajan who meets all expenses. The Khairahas get very little as net wages.

Suggestions.—Water is essential and must be easily available. The industry should be more properly organized and better method of chipping and boiling should be employed to prevent wastage as suggested in Mr. A. C. Chatterjee's Notes on the industries of the United Provinces.

5. Oil.

Lakhimpur market commands an extensive supply of oilseeds and the exports from that market alone are as follows:—

			Maunds.
Castor seeds	...	...	60,000
Linseed	...	...	10,000
Rape seed	...	...	10,000
Mustard	...	...	8,000
Lapeta or mixture of rape and mustard			3,000
Poppy	...	...	400

Oilseeds are invariably exported. Castor seed goes to Shahjahanpur and Manauri, rape seed to Bengal and linseed to Calcutta and Bombay for export outside India.

An oil mill has been set up at Wesleypur 8 miles from Golagokarannath by Mr. Claxton, but it has not yet been worked.

Fatehchand Oil and Flour mills has ceased working.

It is only the village teli with his bullock driven kolhu that consumes some rape and mustard seed for local as well as mofussil supply. The teli seldom engages an outsider. He sets the kolhu in motion and the women and the children look to its working. They are all agriculturists. They take oilseeds from banias or customers for crushing. They give back oil and get oil-cake as well as some grain as wages.

The cost of maintaining the bullock is not much in the villages, but the capital outlay is prohibitive in many cases, specially when there is some epidemic among the cattle.

There are about 1,500 kolhus producing 22,500 maunds of oil and 45,000 maunds of oil-cake.

Suggestions.—Hand presses ought to be started for castor-oil as at Shahjahanpur. Kheri castor seed is of superior quality. A well equipped oil mill for mustard and other seeds should also flourish, specially as demand for linseed oil is increasing in India.

6. Textile.

(1) *Weaving.*

Kheri district was never famous for weaving and only coarse cloth (garha and tapti) are woven on the throw-shuttle loom. Kheri is an important centre; other places are Bheera-Ghasi and Sisauna in Lakhimpur tahsil. At Sasiaganj or Sahebganj in Mahumdi tahsil the Salvation Army has got a settlement where they use the Salvation Army Patent push-shuttle looms. Fly-shuttle looms and warping frames are practically unknown in the district.

Mill spun yarn is usually used. The family is the unit. Bobbins are filled and warps laid by boys and women and the sizing and dressing of the warp is done by one weaver for another in a friendly way. Yarn is obtained from the yarn dealers of Lakhimpur, Mahumdi and Golagokarannath who take their stock to the village markets as well.

Cloth is sold in the markets to individual customers as well as wholesale through dallals or brokers who charge one pice per piece up to the value of Rs. 3 and 2 pice per piece above Rs. 3.

The weavers can get yarn at credit from the yarn dealers, and those who make regular weekly or fortnightly payments are not charged anything extra for credit.

There are 940 looms in the district producing about 40,000 yards of cloth and consuming about 235,000 lbs. of yarn.

	Rs. s. p.
<i>Profit.</i> —Price of 3 lbs. of yarn for 10 yard piece	2 12 0
Other charges	0 4 0
Total	3 0 0

This will sell for Rs. 4 and will take 1½ days.

Suggestions.—Weaving is not attracting the weavers of the district and out of 300 adult weavers at Kheri only 100 are working on the looms. The use of fly-shuttle looms should

first be popularised to better the lot of the weavers and then will come the time for co-operative organization.

(2) *Tat-patti weaving.*

Tat-patti (strips of sacking) is made out of sanai cord or sutli. The fibre is spun into sutli by means of the wooden cross Oena. Boys and women are usually engaged in spinning sutli. This sutli is used both for warp and weft in tat-patti weaving.

Tat-patti is woven in strips of 9 inches to 12 inches wide and 21 feet to 27 feet long. The length of the warp is generally 2 to 3 feet more than the desired length of the patti. One patti 9 inches long and 27 feet wide can be woven in one day if sutli be ready and if three persons join to do the work. These strips are sewn together to make salita or pakhari for grain loading carts and goni or bags for loading grain on pack animals. A pakhari is made of 4 to 8 pattis according to size and a goni of two pattis.

The process of weaving has been described in detail by Mr. N. C. Dutt of Benares in his note appended to the Basti report. They set up their looms in mango groves. The loom is a very simple affair and in principle is similar to the throw-shuttle loom. The most important part of the process is the beating of the weft cords by a dagger-shaped wooden appliance called hattha. A heavy beat is required.

Tat-patti weaving is done at Mamari in Mahumdi tahsil, Ekbalpur, Bahadurpur, Atkohna and Jamalpur in Kheri tahsil and Sadburpur in Nighasan tahsil.

Organization.—Kurmis and kahars usually weave tat-patti as a secondary occupation. They collect sanai from villages and grow same in their own fields. They purchase sanai from mahajans in off season. The members of the family usually do all the work.

Marketing.—It is all consumed locally by the village cart-owners, etc., and the little that remains is disposed off in the village markets. A large quantity comes from Hardoi and Shahjahanpur.

Profit.—Sanai for 1 patti, 2½ seers at 8 annas a seer equal Re. 1-6. This will sell for Rs. 2-4, leaving 14 annas as his gross income, which includes the wages, wear and tear of the loom, etc., and is earned in 1½ days.

Suggestions.—About 9,000 maunds of sanai are available and more can be grown as the soil is suitable for it. Tat-patti weaving can be a profitable concern if the weavers of this place put their heart into the business. The loom invented at the Benares Weaving Institute should be able to increase the output.

Production.—There are 125 tat-patti weavers producing about 6,250 pattis of 9" x 27' and consuming about 470 maunds of sanai.

(3) *Dyeing and printing of cotton fabrics.*

Printing of cloth is not done anywhere on a scale to deserve even a passing mention. There are some dyers who dye dupattas of Gaddi and Chamar and Pasi women with indigo. There are 45 dyers at Mahumdi, Kheri and Dhekwa. They mix lime and saji with indigo in vats. They dye cloth of customers. Indigo is obtained from baniyas or itinerant merchants of Azamgarh and Gorakhpur. They charge one anna to one anna six pies per yard for dyeing.

Their average income is 8 annas a day. For a chatak of indigo they mix $\frac{1}{2}$ seer of saji and $\frac{1}{2}$ seer of lime, and this is sufficient for 15 yards of cloth.

(4) *Woollen blanket weaving.*

Coarse and light woollen blankets (kamlis) are made by Gadariyas in the villages from wool locally obtained.

Women clean and spin wool, while men weave it into pattis 12 inches wide and 4 feet long. Four of these pattis are then sewn together to form kamlis. Price of a blanket is Rs. 3 to Rs. 4.

Blankets are sold to villagers in the village and also taken to the bazars.

The quality is poor and brings very little profit. It is only a secondary occupation of the Gadariyas who are all agriculturists.

There are 185 Gadariyas making 1,850 blankets annually.

CHAPTER IV.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

The district is rich in raw materials and offers a good field for industrial activities.

1. Leather.

About 25,000 hides and 45,000 skins are easily available annually for being tanned into leather.

It is necessary to have scientific flaying dressing and curing for getting good hides.

There is sufficient material available for a tannery.

We have sal bark, babul bark and fruit aonla, harra and reh for tanning. Babul and reh are available near the Chauka so that there can be no difficulty about water and the herbs and fruits rich in tannin can be collected from the forests.

2. Lac.

A good supply of lac can be obtained if the dhak jungles could be utilised for the purpose. Even at present without any scientific culture a large amount is gathered every year from jhau and pipal trees and sent to Mirzapur. It is a good source of income to the zamindars.

3. Honey and wax.

India imports a considerable amount of honey and some enterprising capitalist with a technical expert should undertake the collection and refining of honey and wax. Honey is of a good quality.

4. Catechu.

The present crude method of extraction involves loss of tanning and dyeing materials. The industry can be very paying if properly organized.

The Khairahas have not much interest in the work being made to work for an absentee mahajan who pays them bare subsistence wages. Mr. Chatterjee's notes contain valuable suggestions and educated capitalists can easily adopt them even with the help of Khairahas.

5. Wood-working and sawmill.

The abundance of good timber offers scope for a sawmill and wood-working factory. There being transport facilities it should not be difficult to send out finished articles in place of raw timber.

6. Matches.

Semal and Pipal are good for matches, but the supply is not such as to warrant a power match factory. It is, however, possible to get enough wood for hand machines, many of which can be set up by small capitalists organized on co-operative lines. They can thus get wood jointly and own some of the appliances jointly. Some quantity of semal wood was exported from Kheri to Mesopotamia during the war for river crafts.

7. Wood tar industry.

Wood tar can be easily obtained in the preparation of charcoal from fuel. It is now burnt off and can be collected by proper arrangement. It is understood that the Forest department has taken up this question and an expert is working on the possibilities of the problem.

8. Oil.

Castor seeds are in abundance and about 60,000 maunds can be easily available. This should be enough to start hand-presses, specially as castor seed of Lakhimpur is good.

An oil mill and varnish factory can also be successful. It can utilise the resources in mustard and linseed oilseeds. About 38,000 maunds of linseed are produced and about 20,000 maunds come from Nepal.

The supply of rape and mustard is greater still. About 76,000 maunds are produced and about 30,000 maunds come from Nepal.

The metal utensil makers have not yet any formidable rival. The prejudices of the people are in favour of country-made articles, but there is a tendency for light and elegant articles. The moulds should be made of a permanent material so as to cast light articles and improved lathe should be used as the present lathe will cut into the lighter vessels.

Co-operation.—Co-operation has made little headway in the district and is necessary for the present. The markets are controlled by brokers and mahajans who derive the full

advantage of market rates. The cultivators cannot deal with agents of the exporter who always pay at the market rates to the middlemen. Co-operative selling should be organized. The ryots can then store their grain and get full market value for their goods. The store can advance money on the security of the produce.

9. Sugar works.

Soil and weather conditions are favourable for the cultivation of sugarcane.

Many zamindars have large farms ploughed by motor ploughs and watered by power driven pumps. The Maha-Luxmi Sugar Corporation has already embarked upon an ambitious scheme of manufacturing sugar by direct process. They will have their works at Aira with an extensive farm. They have taken a loan from the Government and will start work within a year.

10. Cattle breeding.

The zamindars can easily undertake cattle breeding in their farms at Kheri. The breed of North Kheri animals is good and a good supply of well bred animals can be had if organized.

CHAPTER V.

1. Crude saltpetre making.

STATISTICS.

Year 1922-23.

Raw material—Lona or nitrous earth.

Number of men engaged—120.

Wages—About Rs. 15 per season of 2½ months.

Outturn—729 maunds.

Exports—500 maunds.

Where exported—Farrukhabad.

Price—Rs. 3 to Rs. 4 per maund.

Average production—13½ maunds per pan.

2. Saltpetre refining.

Year 1921-22.

Raw material—Lona or nitrous earth.

Number of men engaged—15.

Wages—6 annas a day.

Outturn—500 maunds.

Exports—500 maunds.

Where exported—Calcutta.

Price—Rs. 9-8 per maund F. O. R. Howrah. Two Kothis or Refineries, one at Dharahra and one at Amethi in Nighasan tahail.

3. Metal utensils making.

Year 1922-23.

Raw material—Old utensils and bars of brass, kaskut and phool.

Quantity used—25,000 maunds.

Import—15,000 maunds.

Whence imported—Neighbouring districts and Cawnpore.

Number of men engaged—650.

Wages—Journeyman labourer—8 annas per day.

Workman or manufacturer—Lota, 9 annas per seer.

Batua, 8 annas per seer.

Dekchi, 6 annas per seer.

Expert lota maker—Rs. 2 per seer. He can make fancy articles of phool.

Outturn—20,000 maunds.

Exports—15,000 maunds.

Where exported—To districts of the United Provinces.

Price—Raw material—

Kaskut, 10 annas a seer.

Phool, Re. 1-8 a seer.

Ready-made articles—

Kaskut—Lotas, Re. 1-6 a seer.

Batuas, at Re. 1-4 a seer.

Phool, Rs. 3 to Rs. 4 per seer according to workmanship.

4. Tobacco.

Year 1922-23.

Raw material—

Tobacco leaf 7,000 maunds.

Shira 7,000 maunds.

Sajji 5,000 maunds.

Import—7,000 maunds of shira.

Whence imported—Shahjahanpur.

Number of men—500.

Wages—Profit.

Outturn—20,000 maunds.

Price—2 annas to 3 annas per seer.

5. Cotton weaving.

Year 1922-23.

Raw material—

Mill-spun yarn of 13½^s, 16½^s, 20½^s and 22^s counts.

Quantity—235,000 lbs.

Imports—235,000 lbs.

Whence imported—Cawnpore, Ahmedabad, Agra and Lucknow.

Number of men—2,000.

Wages—Profit.

Outturn—940,000 yards of cloth.

Exports—50,000 yards.

Where exported—Neighbouring districts.

Price—Rs. 2-8 to Rs. 4 per piece of 10 to 12 yards.

Number of looms—940.

6. Tat-patti weaving.

Year 1922-23.

Raw material—Sanai.

Quantity—470 maunds.

Imports—Nil.

Number of men—125 actual weavers.

Wages—Their profit.

Outturn—6,250 pattis of 9" × 27' size each.

Exports—Nil.

Price—Rs. 2-4 to Rs. 4 according to size and quality.

DIRECTORY.

1. List of grain merchants.

At Lakhimpur.

- Messrs. Haji Lal Mathura Prasad.
 „ Gurtu Mall Debi Charan.
 „ Nanak Chand Ramcharan.
 „ Jwala Prasad Shiva Prasad.
 „ Sohan Lal Kedar Nath.
 „ Luxmi Chand Salig Ram.
 „ Lalji Mall Bhagwan Das.

At Golagokarannath.

- Messrs. Bhagwan Das Behari Lal.
 Mr. Ajodhiya Prasad.
 Messrs. Tulsi Ram Jia Lal.
 „ Baij Nath Gopal Ram.
 „ Hardeo Sahai Banwari Lal.
 Mr. Rameshwar.
 „ Mohan Lal.
 „ Kundan Lal.
 „ Duli Chand.

2. List of lac merchants.

- Raghunandan Shah, Singhai.
 Ramzani, Singhai.
 Imami Manihar, Lakhimpur.

3. List of catechu merchants.

- Ganga Charan, Singhai.
 Messrs. Sadhari Lal Badri Prasad, Lakhimpur.

4. List of honey and wax merchants.

- Ganga Deen of Singhai.
 Sadhari Lal Badri Prasad, Lakhimpur.

5. List of forest contractors.

- Lalta Prashad, Ram Lal, Bhagwan Dass, Moolchand
 Abdul Jalil Khan, Harsukh and Kallan for South Kheri, and

Ram Saran, Lallu, Budh Ram of Delhi, Ram Sarup, Kosli,
District Rohtak, for North Kheri.

6. List of hide merchants.

Messrs. Channu and Makku, Mahumdi.
Pachchu, Mahumdi.
Rabood Chaudhri, Mahumdi.
Idda, Mahumdi.
Imam Ali, Mahumdi.
Chaudhri Ali Bux, Mahumdi.

7. List of utensil makers.

At Kaimhara.

Hazari.
Ajodhiya (son of Sadheri).
Badri.
Ori Lal.

At Oel and Dhakua.

Kedari.
Badri Seth.
Ram Bharosey.
Hari.
Durga.
Ram Sahai.
Raghuber.
Janki.
Chheddi.
Laltu.
Ram Lal.
Bantan.
Kandhai.
Darshan.
Kasi.
Dularey.
Puttu.
Sadhu.
Kandhai.
Mathura.
Gadodi.
Tulsi Ram.
Ganga Deen.

Badri.
 Ramcharan Seth.
 Reoti.
 Gokul.
 Dwarika.
 Basant.

8. List of dealers in utensils.

At Oel and Dhakua.

Sheo Dayal Shah.
 Umrao Lal Khajja Lal.
 Mannu Lal Chhedi Lal.
 Ganeshi and Janki.
 Kandhai and Sheo Ram.
 Sewak Ram Puttu Lal.
 Munna and Baiju.
 Jagdeesha Nand.
 Mathura Prasad.
 Baldeo and Sheo Mangal.
 Dariao Singh.

9. List of makers of moulds for utensils.

At Oel.

Baiju.
 Sewa Kahar.
 Gulab Kahar.
 Dwarka.
 Baur.
 Moti.
 Narain.
 Dujai.
 Baldeo.
 Radhey Krishna.
 Gangu Chhipi.
 Tuli.
 Bhagat Chhipi.
 Munna Kalwar.

10. List of saltpetre works.

Messrs. Narain Das Gauri Shankar's Shors Kothi, Dhaurahra, tahsil Nighasan,

Messrs. Narain Das Gauri Shankar's Shora Kothi, Amethi.
tahsil Nighasan.

11. List of leather workers.

Mochis who make good shoes at Mahumdi—

Kandhai.

Dwarka.

Kesari.

Mochis who make good shoes at Reoti—

Chunna.

Lallu.

Rudda.

Tanners of Shakerpur, tahsil Mahumdi—

Tula.

Chinta.

Ghunai.

Maiku.

Kandhai.

12. List of cotton weaving centres.

Kheri, Sisauna, Atkohna, Lakpehra, Bheera-Ghasi in
Lakhimpur tahsil.

13. List of yarn dealers.

At Lakhimpur.

Seth Jagan Nath.

Chunni Lal.

Basanti Lal.

Birju Khatri.

Chhutkan Lala.

At Golagokarannath.

Kanhaiya Lal.

Jagannath.

At Mahumdi.

Laltu.

At Kheri.

Ali Bux.

14. List of dallals or brokers of weavers' produce.

At Lakhimpur.

Muazzam.

Karim.

Usman.

At Mahewaganj.

Imruddin and Roshan.

At Kheri.

Muazzam.

At Bheera Ghasi.

Khairati.

Bakridi.

Razzak.

15. List of cloth merchants.*At Lakhimpur.*

- Messrs. Ram Charan Bhagwan Dass.
 ,, Jumna Prasad Jagdamba Prasad.
 ,, Jagi Dutt Deo Dutt.
 ,, Mata Deen Manik Chand.
 ,, Panni Lal Jagannath.
 ,, Chhotey Lal Ramcharan.

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Report of the
INDUSTRIAL SURVEY
of the United Provinces

Lucknow District

By

B. K. GHOSHAL, M.A.

5



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FOREWORD.

The present report is the result of a general survey of the main industries of the district. It shows the district resources in raw materials and the various industrial uses to which they are at present put. And though it gives such short suggestions for improvement in the existing industries as occur to a non-technical man, they are meant only as suggestions for experts to take up. The report is only an attempt to supply the ground work on which intensive prospecting should proceed, to locate the materials and their available quantities, to describe the conditions of labour and the present organization of the industry. It is at best a compilation.

An attempt has been made in the report (1) to bring up-to-date the materials that exist in the extant monographs and (2) to collect materials for a provincial hand-book of industrial information. The figures of exports and imports are mere approximations, as they were not available districtwise, and in order to collect them it would have been necessary to entertain a special staff in the offices of the various railway systems running through the province the entertainment of which could not be warranted in the present financial condition. The Superintendent had therefore to be content with whatever estimates were given by the people in the business and whatever figures could be obtained from Municipal, District Boards and other Government records. Free use has been made of the latter, and the information thus obtained has been verified on the spot by local enquiries in as many ways as possible. Still it can be hardly claimed that it is accurate as people from whom it has been obtained were naturally very reticent in giving it. The non-cooperation movement, the lurking fear of the Income-tax Officer making use of the information for purposes of assessment and a wrong suspicion that the enquiry was being conducted to make

the information available to foreigners desirous of killing the cottage industries by organizing works on a mass production basis, all combined to make the task of the enquirer difficult. The purpose of the report should have been served if it can impress even a few with the necessity of proceeding with further enquiries with a view to starting new industries or improving the existing ones.

Lucknow is one of the smallest districts in the province, but it is a big trade centre and has been the home of art industries since the Nawabi days. Some of its industries and resources are given below :—

1. *Oil*.—Cost of maintaining bullocks is heavy in Lucknow. The result is that even if a *teli* wants to keep a larger number of *kolhus*, he cannot do it. The initial charges of purchasing animals and the recurring charges of their upkeep are both beyond his means. A cheap hand or two-man power press would be very useful and would be readily adopted. Experiments should be made to select one suited to the requirements of the Indian *teli*. It should be portable, easily adaptable to crush various kinds of seeds, simple in construction, easy of being repaired by an ordinary smith, and cheap. Such a press would command universal sale and would improve the oil-pressing industry very much.

2. *Perfumery*.—The Divisional Superintendent suggests improved stills having a cage or false bottom to prevent flowers from getting scorched by the direct fire, (b) some worm arrangement in the receiver, (c) research for a substitute for sandal oil as base. He thinks that perhaps til oil could be introduced as such if it could be purified and deodorised. There is no doubt that the old type still requires improvement. (a) and (b) are both good suggestions and (c) should be brought to the notice of the Principal of the Technological Institute in the Oil department.

3. *Weaving*.—A Co-operative Store (a) for the supply of yarn, (b) for the supply of mechanical appliances, and (c) for the sale of finished goods is suggested. (a) There is no doubt that a Co-operative Store is a necessity. It can bring cheap yarn

handy to the weaver. (b) Ordinary warping machines are not so costly as to require a special organization. But it will be advantageous to the weavers if they could combine to own power machines for carrying out the preliminary processes and supplying warps and weft bobbins sized and beamed ready for the loom. This will help the store in standardising the products and in the long run to take up co-operative sale, in the adoption of which there are at present many difficulties. Children and women mostly help in the preliminaries, and it is yet to be seen how weavers would take this. This will free women and children, and it may be argued that as children cannot and women do not weave the family cannot increase the output by the substitution of mechanical for hand labour in the present organization of the industry. But women do weave in some districts and the prejudice against their weaving will be removed in course of time while children can be sent to schools which is the proper place for them at the age at which they are engaged in this work.

Small warping frames have been readily adopted in every place where they have been demonstrated, as they save the labour of the warping boy. A Co-operative Store will not be able to give demonstrations unless it is on a very big scale and can maintain a sufficient staff. It would be preferable if a separate agency could be started by which demonstrations could be given in central places, the Government sharing the cost with the firms manufacturing appliances of approved patterns.

(c) Until and unless the goods are standardised a Co-operative Store will have to maintain a large staff of sorters to fix the prices to be paid for the goods brought by its constituent members. Want of uniformity in texture combined with difference in quality and design which change with every piece and the great higgling after which prices are settled are all factors which stand in the way of the proper organization of the Co-operative Society for the sale of finished goods. Even the panchayats of the same castes have not been able to control the dealings of punches of the Co-operative Society and the failure of the Co-operative Society of silk weavers in Benares was

attributed by many to the working of such causes. But the store can undertake the advance of raw materials on the security of manufactured goods in slack seasons and thus help members in selling the goods to their best advantage. It is also suggested that the weavers can collect their goods and send them to markets through one of the society's members to be selected by turns. This will save the time of so many and eliminate the competitive prices. The rest can weave in the time thus saved and increase production.

4. *Hosiery*.—(a) Co-operative Store, (b) instructions in knitting, (c) substitution of electric for hand power are suggested in the report.

(a) A Co-operative Store has already been recommended in connection with hand-loom weaving. But in this case the store can easily take up the sale also as this class of goods can easily be standardised.

(b) Instruction in knitting is already imparted in several Government institutions. Besides these the sellers of knitting machines give practical demonstrations of the machines to the purchasers. I do not think that with the existence of the two agencies for imparting instruction there is need for more schools to teach weaving of hosiery. Here too it will be a better arrangement if the Government co-operates with any manufacturing firm desirous of introducing its machines by giving practical demonstrations by way of advertisement.

(c) I am sceptical about this suggestion. Many hosiery factories had to be closed for want of an agency for sale. The report mentions that the local shop-keepers do not stock goods manufactured in the local factories. They push the sale of foreign articles. Before increasing the output it is essentially necessary that an agency be organized which may store, exhibit and sell the goods of the various factories with as good an organization as that of the big firms selling foreign goods. Such an organization can also help in collecting the goods of the mofussil manufacturers, but it will require workers who could be relied upon by their training and unimpeachable honesty to fix prices and reject goods below the standard. When such an

organization comes into being it may feel the necessity of having power factories of the type suggested. There is no doubt that for some things like fancy socks or undervests power machines are the best, but consolidation must precede expansion or at least go side by side with it.

5. *Chikan embroidery.*—The industry is said to be awaiting some enterprising capitalist to take up the work of ensuring a regular supply of good Chikan work to foreign markets. There is no doubt that what is killing the industry is want of business honesty in the trade, the poverty and the low wages paid to the actual workers and the existence of too many middlemen.

What is wanted is the organization of Ladies' Associations or Clubs which could supply material, fix prices, distribute wages and collect finished products for a Co-operative Store. It is very doubtful if a suitable agency can be found to do this missionary work, but if one could be found there is little reason why Chikan industry should not improve under it. The most crying need of the industry is a strong, durable and transparent linen. The Emporium is taking up the work of selecting one.

6. *Calico printing.*—A Co-operative Store for the supply of cloth and the erection of a steaming plant are both necessary. The demand for a school to teach improved methods of dyeing and printing and to introduce better designs can be easily gauged by sending a peripatetic school and demanding fees. If it attracts people a permanent school ought to be established to train apprentices in the art and teach them some theory with more practical art. The question of finding out fast yellow and green colours should be referred to the experts of the department either in the Technological Institute or the Dyeing and Printing School. A small hand bill dealing with the methods should be written out in the vernaculars and distributed amongst the printers. Finally, it should be possible to open an agency for the supply of aniline dyes in Lucknow. Correspondence should be established with the principal dye agents in Bombay who could be put in touch with the principal printers in Lucknow.

7. *Leather.*—A Co-operative Credit Society of the Mochis already exists in Lucknow and is prospering. Similar societies ought to be established in other places of the district. Co-operative Societies for sale and production may also be tried as there are strong panchayats among the Mochis which are capable of enforcing their will.

Machinery can very well take the place of hand work in several processes of shoe and boot making. Machines may be owned by the Co-operative Societies—the constituent members working on them by turns, or some capitalist may buy the machines and sell the partly finished products to the Mochis. The pressing of leather “thans”, cutting of heel and sole pieces out of the compressed leather, and the splitting of leather soles where the leather is found to be too thick, ought to be performed by machinery. Shoes and slippers of inferior quality can also be cheaply made by machinery. But the stitching of high grade shoes ought to be left to the hand workers. The United India Shoe Manufacturing Company and firms like it will be found willing to lease machines on hire, and where power is available as in Lucknow such concerns can easily be started.

8. *Tanning.*—Lantern slides should be made for demonstration purposes and should be exhibited to the Chamars. The demonstration should be supplemented by vocal instruction. Samples of leather, finished or half finished, at the various stages should also be shown along with pictures and vocal instruction. Co-operative Societies will certainly be of benefit to the Tanners and can easily be started, but they will require more capital than will be warranted by the “haisiyat” of the members. It will be much better to have a store than a credit society.

The whole question will require a very careful consideration and a committee consisting of the members of the Co-operative and Industries departments might be formed to discuss this and other similar schemes. Co-operative Societies for all industries cannot be started on uniform lines and various types suited to the requirements of the various classes of people should be worked out.

9. *Dairy farming*.—Co-operative Dairy Farming ought to succeed if proper kind of workers were available. But there are great inducements to a man of ordinary means, and although various devices have been introduced to prevent leakage in transit and storage, still it is feared that adulteration does take place. The chief difficulty comes in the store. The constituent members are illiterate and low paid salesmen have to be employed who have no stake in the dairy. I think that for some time the store should only advance money for the purchase of milch animals and register customers who should be allocated to the various members of the society. Complaints from the customers should be freely heard and rigorous action taken against the members found to be adulterating milk.

10. *Clay modelling and pottery*.—It is recommended that arrangements should be made to give training to the local Kumhars in artistic works and the manufacture of glazed and coloured pottery. Training in clay modelling is available to them in the School of Arts and Crafts, but it is not availed of nor is there any hope that the Kumhars will avail of it unless driven by a rise in the standard of production consequent on the rise in appreciation accorded by the public to good artistic work. So long as a Kumhar boy can earn a living by sale of his products and his comparatively cheaper articles can command a sale, no inducement will turn him to the school. The best thing will perhaps be for the capitalist to come in the industry and employ Kumhars on monthly payments and get them trained. Good things could be exhibited then side by side with indifferent work and the taste of the people improved. Improvements in the present process of glazing and colouring will require a long series of experiments. Such experiments can best be conducted under the control of the Technological Institute. After the results of these experiments are available practical demonstration of the improvements suggested will go a long way in training people.

11. *Gold and silver wire*.—Machines to draw wire are coming in use slowly and are bound to replace hand work. One was seen recently installed in Farrukhabad. It is only want of sufficient advertisement that is standing in the way of quicker adoption

of these machines. Perhaps some firm will take up the work of demonstration as an advertisement. In that case the department can co-operate with it.

12. *Horn combs*.—These are made in several places in the province and there is plenty of raw material available. Better processes and better appliances ought to be introduced. Some experimental work is needed and ought to be undertaken in the Research Institute or one of the Technical schools.

13. *Smoking tobacco*.—Pounding tobacco in the lime mills is a rather insanitary way of doing it. The half baked kankar which is crushed in the lime mills contains lot of earth which is thus mixed with tobacco. The tobacco manufacturers may combine to purchase a decorticator which may be worked separately in any existing mill or run by electric power. Lucknow imports tobacco in large quantities from outside. No *tendu* or other leaves will be locally available for making *biris*. But it has successful manufacturers of tobacco and has for a long time been a great distributing centre of smoking tobacco.

14. *Eating tobacco*.—The substitution of mechanical in place of hand labour had better be left to the business men. There cannot be much demand for such machinery as its use will be limited.

Waste utilization industries require organization. Raw material is available in abundance locally.

15. *Jail industries*.—Lucknow Central Jail is said to have specialised in *munj* matting. Expert labour is therefore always available there, otherwise *munj* has to be imported, and it should be cheaper and easier to weave mats out of it in jails of the districts of origin if the latter can keep sufficient prisoners for industrial work.

The marl deposits near Lucknow are only awaiting a capitalist, while an up-to-date tannery is a great necessity which may supply leather to the shoemakers of Lucknow. Fruit canning and making of preserves and jams will be successful on a small scale. But any power hosiery concern should be prepared to face the competition of the big firms of Cawnpore.

Mr. H. B. Shroff, Principal of the Government School of Dyeing and Printing, Cawnpore, has written a note on the Printing of Lucknow and Mr. Nat. Heard, Controller of the United Provinces Arts and Crafts Emporium, Lucknow, has added valuable notes on the Lucknow bidar work, ivory work and silver work. We are much indebted to both these officers and to Mr. S. T. Gadre, Industrial Chemist to Government of these Provinces, who has revised and checked the report and improved it with his suggestions.

Thanks are also due to the following gentlemen who have helped the Superintendent in the difficult task of collecting the information:—

1. Dr. P. D. Kakker, Municipal Commissioner, Chowk.
2. Mr. Ahmad Husain, Proprietor of the firm of Ahmad Husain Dildar Husain, Tobacconists, Chowk.
3. Mr. G. N. Chatterjee, Proprietor of the firm of S. C. Chatterjee and Sons, Shoemakers, Lucknow.
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10. Mr. J. N. Agarwal, Hussanganj.
11. Mr. R. D. Pande, Naib-Tahsildar, Lucknow.

CHAMPA RAM MISRA.

CHAPTER I.

INTRODUCTION.

1.—General features of the district.

Lucknow is the smallest district in the province as far as area is concerned, but the city is the most populous in the province. Its art products have a wide repute, and now even in the domain of large scale organized industries it is coming to the fore.

The important paying industries of Lucknow are those for the manufacture of artistic wares, e.g., Chikan embroidery, gold and silver works, including zardozi, kamdani and gota, calico printing, pottery, weaving, copper and brass utensils, leather, hosiery, tobacco and perfumery. Besides the cottage industries there are the Paper Mills, Cotton Spinning Mills, Brewery, Ice Factories and the new Sugar and Flour Mills in the course of erection.

(a) *Mineral Resources.*—There are kankar deposits at many places. The recently discovered deposits of calcareous marl at Dularnau (the deposits are being worked for producing kank or lime) offer good field for a Cement Factory. *Rak* deposits are not in abundance, although they are found everywhere and utilised by *dhabis*. Some saltpetre is manufactured at Nagram in the Mohanlalganj tahsil.

(b) *Crops.*—The crops are the same as in other parts of the province, but the cultivation of the industrial crops like cotton and oilseeds and hemp is very poor.

(c) *Others.*—The presence of so many slaughter-houses offers good scope for a Tannery and a Glue Factory.

(d) *Communication.*—Lucknow is well connected with the rest of the province by good roads and railways. Besides railway

trains there are bullock carts, pack animals, boats on the river Gumti and motor lorries.

(e) *Irrigation.*—There are no canals. Wells and *jheels* are used for irrigation. The Sarada Canal under construction will irrigate some parts of the district.

(f) *Substitution of local manufactures for imported articles.*—I have mentioned the possibilities of substituting local manufactures for imported things while discussing the different manufactures. Socks and stockings, boots and shoes made locally are already competing with imported articles and can easily replace them with better organization.

Lucknow printed cloth should be able to replace foreign varieties for curtains, cushion covers and ladies' clothings.

(g) *Boundaries.*—

East.—Bara Banki district.

South.—Rae Bareli district.

West and South-West.—Unao district.

North and North-West.—Sitapur district.

The district is level plain with no hills or eminences. It is traversed by two rivers, the Gumti and Son. The south and west of the district have wide stretches of *usar* plain which sometimes extend for miles together and are most marked in the Bijnaur pargana.

(h) *Area.*—967 square miles.

2.—Ferries.

- | | | |
|-----------------|---|---|
| 1. Sarauraghat | } | on the river Gumti in Lucknow tahsil. |
| 2. Kankarabad | | |
| 3. Baitha | | |
| 4. Ghaila | | |
| 5. Gaughat | | |
| 6. Gopramau | } | on the Jhingi nala in Lucknow tahsil. |
| 7. Badian | | |
| 8. Manjhi | } | on the river Gumti in Malihabad tahsil. |
| 9. Kalwa | | |
| 10. Bisabrighat | | |

- | | | |
|-----------------|---|--|
| 11. Suriamau | } | on the river Gumti in Mohanlalganj tahsil. |
| 12. Salempur | | |
| 13. Sheikhuapur | | |
| 14. Gauria | | |
| 15. Ghuskar | | |
| 16. Nurpur | | |

3.—Roads

Provincial metalled—

1. Cawnpore, Lucknow and Fyzabad Trunk Road.
- 2 Lucknow, Sitapur and Shahjahanpur Trunk Road.
3. Railway Feeders to Badshahagar, Bakshi-ka-talab, Mahi-
ballapur and Itaunja stations.

Local metalled—

1. Lucknow to Rae Bareli.
2. Lucknow to Hardoi (metalled up to Malihabad).
3. Lucknow to Sultanpur.
4. Lucknow to Kursi.
5. Bani to Mohanlalganj.
6. Alambagh to Talkatora.

Unmetalled roads—

1. Lucknow to Mohan.
2. Malijabad to Pipalgaon.
3. Malihabad to Mohan.
4. Bani to Mohan.
5. Mohanlalganj to Goshainganj.
6. Mohanlalganj to Maurawan.
7. Chihat to Dewan.
8. Lucknow to Nagram.
9. Lucknow to Bijnaur and Sisai
10. Mal to Kursi.
11. Bijnaur to Banthra.
12. Kakori to Fatehganj.
13. Goshainganj to Satkrih.

Railway Feeders (metalled) —

1. Mohanlalganj.
2. Nigohan.

3. Kakori.
4. Malihabad.
5. Rahimabad.

4.—Railways.

1. The Oudh and Rohilkhand Railway, with the following stations in the district:—Lucknow Junction, Alamnagar, Kakori, Malihabad, Dilawarnagar, Rahimabad, Utraitia, Mohanlalganj, Nigohan on the main line, Malhaur and Juggaur on the loop line. Amausi and Harauni on the Lucknow-Cawnpore branch line.

2. The Bengal and North-Western Railway, with the following stations in the district:—Aishbagh, Amausi, Harauni, Lucknow City, Daliganj, Badshahnagar, Malhaur and Juggaur.

3. Rohilkhand and Kumaun Railway, with stations at the following places in the district:—Lucknow City, Daliganj, Mahiballapur, Bakshi-ka-talab, Itaunja, Aishbagh and Lucknow Junction.

4. The Great Indian Peninsula Railway trains run on the Lucknow-Cawnpore branch line of the Oudh and Rohilkhand Railway.

5.—Markets.

Lucknow tahsil—

1. Chinhat on Sundays and Thursdays.
2. Bangla Bazar in Kila Mahmudnagar on Sundays and Thursdays.
3. Kakori on Tuesdays and Saturdays.
4. Bijnaur on Mondays and Fridays.
5. Rahimnagar on Wednesdays and Fridays.
6. Behta on Tuesdays and Saturdays.
7. Banthra on Sundays and Wednesdays.

Malihabad tahsil—

8. Mirzaganj in Malihabad on Sundays and Wednesdays.
9. Munshiganj in Malihabad on Thursdays and Saturdays.
10. Bakhtiyarnagar on Wednesdays and Saturdays.

11. Kasmandi Kalan on Mondays and Fridays.
12. Pakra on Mondays and Fridays.
13. Rahimabad on Mondays and Thursdays.
14. Mal on Sundays and Fridays.
15. Para on Wednesdays and Saturdays.
16. Bhauli on Tuesdays and Saturdays.
17. Behta on Tuesdays and Saturdays.
18. Mahona on Sundays and Thursdays.
19. Babuganj on Sundays and Thursdays.
20. Itaunja on Mondays and Fridays.
21. Thalwansi on Sundays and Wednesdays.

Mohanlalganj tahsil—

22. Mohanlalganj on Sundays.
23. Amethi on Sundays and Wednesdays.
24. Amethi on Tuesdays and Saturdays.
25. Bahrauli on Wednesdays and Saturdays.
26. Nagram (Bazar Khera) on Tuesdays and Saturdays.
27. Nagram Mandi on Mondays and Thursdays.
28. Nagram Kotwali on Mondays and Wednesdays.
29. Samesi on Sundays and Thursdays.
30. Sarai on Mondays and Fridays.
31. Mau (hide market) on Wednesdays.
32. Miraknagar on Mondays and Tuesdays.
33. Gumaniganj on Sundays and Thursdays.
34. Dayalpur on Tuesdays and Saturdays.
35. Sissaindi on Wednesdays and Saturdays.
36. Kankaba on Tuesdays and Fridays.

6.—Fairs.

Lucknow tahsil—

1. Kanslila Fair in Kilamahmudnagar on *Bhadon sudi* 8th.
2. Mahabir-ka-mela in Sheikhpur on first Tuesday of *Magh*.
3. Sarwar Ganga in Sargamau on *Kartiki Purnamashi*.
4. Sattiji in Thawar on *Aghan badi* 8th.
5. Surajkund in Birba on *Bhadon sudi* 6th.

6. Malik Umar Shahid in Bijnaur on last Sunday of *Baisakh*.

Mohānlalganj tahsil -

7. Ganga Ashnan in Salempur on *Katiki Purnamashi*.
8. Ganga Ashnan in Shekhuaghat on *Kataki Purnamashi*.
9. Dhanusjag in Nagram on *Aghan Purnamashi*.
10. Ganga Ashnan in Rati on *Katik Badi* 14th.

Malihabad tahsil—

11. Takht in Malihabad on 7th Muharram.
12. Ashra Muharram in Malihabad on 10th Muharram.
13. Katki Mela in Bisahrighat on *Katiki Purnamashi*.
14. Dudha Dhari in Tirwa on *Kuar Sudi* 11th.
15. Dasa Debi in Ekdaria on *Jeth Sudi* 10th and *Kataki Purnamashi*.

CHAPTER II.

RESOURCES.

1.—Agricultural Produce.

(1) *Wheat.*

Area cultivated	...	...	78,759 acres.
Outturn	...	...	9,38,849 maunds.
Imports with flour in Lucknow city	9,40,183	..	
Exports with flour from the city	88,756	..	

(octroi figures.)

Price fluctuated from Rs. 7 to Rs. 10 per maund.

Lucknow wheat is commonly known as "Cawnpore" and sells at 2 annas per maund more than the Fyzabad variety. It is packed in bags of 2 maunds each and shipped in similar bags. The Corn Trade Association in England regulates the quality of the exports and allows export of grain on the following basis:—

The figures against each grain indicate the percentage allowance of foreign matter in the grain. Up to limits mentioned below the quality of the grain should be taken as good quality acceptable for foreign export. (These limits really mean the limiting purity which an agriculturist can ordinarily attain in preparing his grain for the market.) Market prices are based on these limits. But a consignment of greater or less purity can fetch a proportionately more or less price:—

			Dust.	Food grains.
Wheat	...	...	2	2
Lentils	...	...	3½	...
Barley	...	...	2	2
Maize	...	...	1	...
Jowari	...	...	3	...
Grain	...	...	2	...
Peas	...	...	3	5
Kesary	...	...	6	25
Oats	...	...	3	...

Owing to repeated failures of crops in the Punjab and the United Provinces during the war, Government restricted the free export of wheat from India by private merchants.

Freight.—Per ton from Calcutta to London in 1920 was £27-4-2, from Karachi, which is the best port for wheat, being protected from the monsoons, £ 5-19-0.

Export duty.—Free.

Import duty.—England, Belgium and Holland free, in France 40 per cent., in Germany 37 per cent., Italy 41 per cent. and in Japan 19 per cent.

(2) Barley.

Area cultivated.—6,351 acres.

Outturn 69,762 maunds. Exports and imports not known.

Exports are mainly to the United Kingdom. There is good demand in the country and very little is exported.

The unit of sale in Lucknow is the maund and it is shipped in bags of 2 maunds.

Export duty.—Free.

Import duty.—Free in England, Belgium and Holland 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.

(3) Gram.

Area cultivated.—20,602 acres.

Outturn.—2,17,809 maunds. It comes in the market generally in April and a bulk of the business is put through before the rains. The exports are mainly to England, Ceylon, Straits and the Mauritius from the port of Karachi.

The unit of sale is the maund and that of shipment is the bag of 2 cwts. from Karachi and 2 maunds from Bombay.

Prices were from Rs. 5 to Rs. 7 per maund in Lucknow.

Export duty.—Free.

Import duty.—Free everywhere except in Germany 18 per cent. and Japan 16 per cent.

(4) *Peas.*

Area cultivated.—8,969 acres.

Outturn.—13,561 maunds. The same remarks as for gram. It is classed as pulse.

Freights, etc., same as for gram.

(5) *Poppy seed Opium.*

Area cultivated.—3,614 acres.

Outturn.—16,218 maunds at 4 cwts. per acre.

The "white" variety is commonly grown here. The seeds come to the market in April and most of the business is put through by July. In India the use of the seed for oil is not common and it is used as food. The crop is grown for opium. Oil is used in France for paint making and also as edible oil.

The average percentage of oil is 30 per cent.

It is grown under the supervision of the Government. The pod is scarified and opium oozes out. This is sent to the Ghazipur factory. The cultivation has been reduced of late. Opium can be sold by licensed vendors only. The unit of sale for seed is the maund and of shipment a bag of 140 to 168 lbs. Opium is shipped and sold in chests of 140 lbs.

Export duty.—Free.

Import duty.—Seed is imported free by England, Belgium, France and Holland, 6 per cent. in Germany.

(6) *Rice.*

Area cultivated.—49,260 acres.

Outturn.—540,183 maunds.

Imports in Lucknow City.—404,512 (Burma rice).

Exports from Lucknow City.—59,263 maunds.

For export purposes, the United Province is not important.

The unit of sale is the maund and it is exported in bags of 2 maunds.

Prices fluctuated between Rs. 8-8-0 to Rs. 13-8-0 per maund.

Freight from Calcutta to London £ 6-11-3, and from Bombay £5-17-2.

Export duty.—Three annas per maund of 82 pounds.

Import duty.—Free in the United Kingdom, Belgium and Holland, 23 per cent. in Austria-Hungary, 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.

(7) *Maize.*

Area cultivated.—18,427 acres.

Outturn.—261,308 maunds.

The local consumption is great and the export is gradually falling, perhaps owing to the better production in Argentina.

Unit of sale is the maund and it is shipped in bags of 2 maunds.

(8) *Arhar.*

Area cultivated.—35,213 acres.

Outturn.—209,334 maunds.

It is largely consumed in the country as pulse. The plant stalks are used for basket making.

(9) *Cotton.*

Area cultivated.—7,876 acres.

Outturn.—2,170½ bales ginned cotton of 440 lbs. each.

Lucknow production is not much. The short stapled variety grows here. There are no ginning factories in the district and raw cotton is sent to Cawnpore for being ginned. For local use the hand gins are used.

The unit of sale is the maund and that of shipment the bale of 400 lbs. to 500 lbs.

Freight is charged on measurement. One hundred bales of 400 lbs. each will weigh about 25 tons. From Bombay to Liverpool it is £4-5-0.

Export duty.—Free.

Import duty.—Free in all countries, except Italy 2 per cent. and Russia 49 per cent.

(10) *Sugarcane.*

Area cultivated.—2,870 acres.

Outturn.—91,000 maunds of *gur*.

Imports in the Lucknow City.—68,869 maunds.

Export from Lucknow.—35,154 maunds.

Sugarcane is sown nearly everywhere, but in small areas. Irrigation is the chief thing and only those fields which are easily irrigable are sown. Faizullagunj, village in Lucknow tahsil is famous for sugarcane crop, but it is all utilised locally as refreshing *repast gaderi*.

There is going to be started very soon a big Sugar factory and it would pay both the cultivators and the millowners if the better variety of seed were imported and the cultivation increased. There will always be a keen demand for good chewing cane.

Export duty.—Free.

Import duty.—Free elsewhere and 18 per cent. in the United States.

Freight from Madras to London is £7 per ton.

(11) *Linseed.*

Area cultivated.—68 acres.

Outturn.—288 maunds.

The plant is cultivated for the seed and only not for the fibre, although the plant resembles the European flax. Most of the seed is exported and its oil is used there chiefly in making boiled oil, in paints, oil varnishes etc., and in random cases in the production of margarine and glycerine. Linseed is a *rabi* crop and comes to the market in May. The quality grown here is small and it is not an important article of export from Lucknow. It is packed in gunny bags of about 2 maunds for export.

Export duty.—Free.

Import duty.—Free in all countries, except Italy 18 per cent.

Freight from Calcutta to London is £7-4-2 per ton.

Price is Rs. 12 to Rs. 14 per maund.

(12) *Rape and Mustard.*

Area cultivated.—46 acres.

Outturn.—269 maunds.

This is the most important oilseed for local consumption and the little that is grown here is used up.

If exported it is shipped in bags of about 2 maunds.

Export duty.—Free.

Import duty.—Free in all countries, except Hungary 12 per cent. Germany 9 per cent. and Italy 16 per cent.

Price is from Rs. 7 to Rs. 8 per maund.

(13) *Til or Sesamum.*

Area cultivated.—124 acres.

Outturn.—454 maunds.

It is an important oilseed, but in Lucknow only the black or the inferior variety is grown. The white variety is very good and is preferred by scented oil manufactures. Til is used for food and its oil is also used as food and as hair oil.

Season of sale.—November to March.

Shipped in bags of about 2 maunds.

Export duty.—Free.

Import duty.—Free in all countries, except Germany 6 per cent., Italy 16 per cent. and Russia 10 per cent.

Price is Rs. 15 to Rs. 20 per maund.

(14) *Ground-nut.*

Area cultivated.—759 acres.

Outturn 7,590 maunds at 10 maunds per acre.

Very little is exported. Much of it is used as food (*Mungphali*) during the cold weather and its oil is crushed and mixed freely with *ghee*.

Freight.—From Madras to Marseilles is £8-5-0 per ton.

Export Duty—Free.

(15) *Mahua Seed.*

Number of Mahua groves 650, mostly in Mohanlalganj. The seeds are obtained from the Mahua flowers which are used

as food as well as for making spirit. The seed is used as cattle food but now some is also exported to Europe for soap making.

The seed is shipped in bags of 140 to 154 lbs.

(16) *Juar.*

Area cultivated—23,259 acres.

Outturn.—194,013 maunds.

It is not exported, but used by villagers as food. The plant in the dry state is used as cattle fodder.

(17) *Bajra.*

Area cultivated.—38,737 acres.

Outturn.—269,515 maunds.

(18) *Tobacco.*

Area cultivated—266 acres.

Outturn.—1,862 maunds at 7 maunds per acre.

Import—14,000 maunds (from tobacco dealers).

Export.—Nil.

Price.—For local variety is Rs. 13 to Rs. 15 per maund and imported varieties; Bahraich Rs. 18 to Rs. 22 per maund of 46 seers, Sitapur Rs. 23 per maund, Behar Rs. 18 per maund and Bengal Rs. 15 per maund.

Season.—It is sown in November and harvested from March to June, during which time the sales are transacted.

In Northern India the yellow flowered *Nicotiana Rustica* variety is grown. The leaves grown in the different places are different in quality. Much depends upon the proportion of salt in the soil and the water used for irrigation. The greater the quantity of salt the greater the percentage of nicotine. For this reason the tobaccoists get tobacco from different places and mix them proportionately.

Preparation of the leaves.—Leaves are left to lie on the field in the dew. They are turned during the day so as to avoid the heat charring them. In some cases the leaves are treated with the boiled solution of stems and water. This makes them

dark and they are preferred for preparing eating tobacco and fetch a higher price.

Improvements.—About 3·2 million pounds sterling worth of tobacco was imported into the country in 1920. The field for cigar making is good, and if the better variety of seed that has been introduced at Fusa be used, Lucknow leaf can be used for cigars like that of Madras.

(19) *Hemp.*

In the Lucknow district two varieties of hemp are grown.

Crotalaria Juncea or *Sanai* and *Cannabis Sativa* or *Bhang* commercially called Indian hemp or sann hemp.

Area under Sanai.—839 acres.

Outturn —6,139 maunds at 600 lbs. per acre.

Area under sann hemp.—46 acres.

Outturn —336½ maunds.

(20) *Munj.*

Munj and other varieties of long grass are grown on the roadside and on the boundaries of groves, but no where is the area under them big enough to feed even a small Munj Matting Factory. Even the jail has to get its supply from Kasganj in Etah. The villagers utilise most of the material for their own use. The total area under munj, etc., has been roughly put at 511 acres.

2.—Vegetables and Fruits.

(i) Vegetables of all kinds are grown in the city and in the villages adjoining Lucknow. They use municipal night-soil for the manure. Lucknow's cauliflower is famous.

(ii) *Area under potato.*—2,177 acres.

Total area in kharif.—5,437 acres, in rabi 3,856 acres.

(iii) *Fruits.*—Melons (*Kharbuza*) are grown as summer crop. It is harvested in May and June. They are famous (*Safeda*). They are best when hot winds "Loo" are blowing in summer.

(iv) *Mangoes.*—Number of groves 18,732.

Lucknow mangoes, especially the "Safeda" and "Dasebri" varieties, are famous. Malihabad is the home of mangoes and there are gardens all over the tahsil. They rear grafts in Malihabad and in the Horticultural Gardens and Wazcer Bagh in Lucknow.

Prices—The prices are different for different varieties from Rs. 1 per 100 to Rs. 15 per 100. The unit of retail sales is the dheri of 33 mangoes and of wholesale sales the 100 of 26 panjas, i.e., 130 mangoes.

3.—Minerals.

Saltpetre, *reh*, kankar and marl deposits are the mineral resources of the district.

(i) *Sajji*.—It is scraped as *reh* from the *usar* lands.

Area in Lucknow tahsil—insignificant.

Area in Malihabad tahsil—200 acres in Nabinagar.

Area in Mohanlalganj—600 acres all over the tahsil.

(ii) *Saltpetre*.—This is manufactured by scraping nitrous earth from old walls of houses and the surrounding ground.

There are about 38 acres of soil from which such nitrous earth can be collected.

There are two *karkhanas* in Nagram and its hamlet Kara Nagram.

The Nagram *karkhana* worked from January to June and produced about 120 maunds of saltpetre which was sold this year at Rs. 8 per maund. The Kara Nagram *karkhana* worked from March to June and produced about 54 maunds of saltpetre.

(iii) *Kankar*.—Area under kankar is not known, but it can be had in most places from depths varying from 3 feet to 10 feet. But the supply of good kankar is small. Basaha and Kukrail near Lucknow produce very good kankar.

Lime mills in Lucknow account for about 1,605,000 cubic feet of kankar annually.

Fields are taken on lease by lime mill owners and road contractors and they get kankar excavated and carted. The lease is either for kankar only or for both kankar and earth which is used for brick making. In the former case the ground has

to be filled with the excavated earth. Royalty varies from Rs. 200 to Rs. 300 per *pucca* bigha.

Cost of excavation.—Rupees 4 per 100 c. ft. from brickfields where the kankar is on the surface and Rs. 7 from ordinary fields where the ground has to be filled up and the kankar is found deep in the soil.

Prices.—Rupees 15 per 100 c. ft. anywhere in the city for the Municipality and Rs. 15 to Rs. 17 per 100 c. ft. for the Public Works department. The excavation of kankar is very difficult in the rainy season when the work practically stops.

4.—Animal products.

(i) Wool.

Production from sheep 32,239 lbs. of raw wool taking $1\frac{1}{2}$ lbs. per sheep as the average yield per living sheep for three shearings. Wool from slaughtered sheep 2,98,561 lbs. at $\frac{1}{2}$ lb. per sheep, 58,713 sheep being slaughtered last year.

Prices between Rs. 18 to Rs. 24 per maund.

Lucknow wool is very bad and can be used only for rough blankets in jails, etc. The collection is difficult as nowhere are the Garariyas in large numbers. In Chikmandi they collect wool from sheep skins. For wool of living animals there are three shearings in the year, after the cold weather, the hot weather and the rains. After supplying the jails the wool collectors send the wool to Cawnpore or to the ports where it is sorted, graded and pressed.

The unit of sale is the maund of about 84 lbs. and shipment is made in bales of 3 cwts. from Bombay and Karachi.

Freight from Karachi to Liverpool is £5-6-8 per ton.

Export Duty.—Free.

Import Duty.—Free everywhere except in the United States of America 8 per cent.

(ii) Hides and skins.

Hides.—56,759 hides are available in the district. (23,159 animals are slaughtered and 33,600 hides come to the Mau

Bazar in Mohanlalganj tahsil annually, taking 350 hides per market held twice a week.)

Export and import figures are not available.

Prices average from Rs. 5 to Rs. 12 per hide.

Lucknow is not a market for hides. They go direct to Cawnpore. Lucknow hides are not good and cannot be used for good leather. Even sole leather produced by local tanners is not good. Only the hides obtained from the Military slaughter-house are good, but they are all exported. For export they are "dry salted" or "air dried" on the frame and then arsenicated. This arsenication usually takes place at Cawnpore.

For export purposes they are classed as "Agras" or "North-westerns". The hides are classed as "Deaths" or "Slaughtered" according to quality and not according to the dictionary meaning of the words:—

- (1) *Slaughtered*.—They should be without brand or yoke marks or cuts. Their best variety is marked C., meaning Commissariat—a term used formerly for animals purchased and slaughtered by the Government for military purposes.
- (2) *Dead*.—With minor faults like cuts, etc.
- (3) Rejections with larger faults and then Double and Treble Rejections.

At present there is a slump in the hide market. During the war the Government stopped the export of hides and took up the entire stock for military purposes. Germany was the greatest purchaser of Indian hide.

The unit of sale is either 20 pieces or 20 lbs. and the hides are shipped in bales of 40 to 50 of buffaloes, 100 to 200 of cows and 500 of calves from Calcutta and Bombay in bales of 1,000 to 1,200.

Freight from Calcutta to London is £7-19-2.

Export Duty.—15 per cent. *ad valorem*. A rebate of 2/3rd 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.

Skins.—Lucknow is a good market for skins and there are several godowns in the city where the merchants stock skins and after curing them send to the ports for export.

Number of skins available.

(1) *Slaughtered.*—Goats 51,020, sheep 58,713. Of the sheep skins 40,000 skins are locally tanned.

(2) *Imported.*—170,607 (deducting slaughter-house figures from export figures which are given by the exporters).

Export is about 240,000 skins.

Price is Rs. 170 to Rs. 190 per 100 skins of goats. Cost of wet salting them, Rs. 5 per 100 skins.

Price of barrels in which they are packed, Rs. 6 for 100.

The United Provinces is the premier goat skin producing province in India and local skins are very much liked in Europe, specially for the manufacture of glace kid leather. Goat skins are collected by agents of exporters or middlemen from the different parts of Unao, Bareilly, Lakhimpur, Hardoi, Shahjahanpur, Rae Bareli, Partabgarh and Bahraich. In Lucknow they are treated in a salt solution and packed with the salt solution in barrels. In the ports the skins are often taken out of these barrels and packed in bales, being salted as the freight for barrels is higher.

The exports are to the United States of America, France and England, Lucknow skins are called "Soft Stock" in America as they are wet salted and packed in barrels. The skins are mainly of goats and are classed as "North-west" for export. They are classified according to size. The best skins called "heavy" are 36" long and 21" wide. Sizes smaller than 25" are called "kid skins." The skins of castrated animals fetch a higher price.

Season.—The skins are in the best condition from January to May. They are bad during the rainy season when the prices are low and exporters slacken their purchases.

Freight is per ton and same as for hides.

Export Duty.—Same as for hides.

Import Duty.—Raw free everywhere.

(iii) Bones.

Production.—12,575 maunds from cows, etc., slaughtered at 20 seers per animal, and 6,958 maunds from goats, etc., at 2½ seers per animal. Of these 2,890 maunds, i.e. 5 seers per bigger animals, and 1,371 maunds, i.e., ½ seer from smaller animals, are available from the butchers' shops. The rest have to be picked by bone pickers and collected at one place for export.

They used to go to Calcutta, but now the Magarwara Bone Crushing Factory of Messrs. Allen Brothers is drawing the supply. Bone is used as "meal" for manure, but all has to go out as Indian cultivators cannot afford to use it or do not know its use. Some is used in Government and big private gardens. In Europe they use the arm and the leg bones for the manufacture of buttons, umbrella handles and knife handles, etc. There are four workers in Lucknow who make bone articles along with ivory, but their production is insignificant. In Europe they extract fat and glue out of the bones and there should be some efforts to utilise bone for these purposes here as well.

(iv) Intestine and Blood.

These are collected from slaughter-houses and exported to Germany and England where they are turned into manure or blood charcoal. The municipal and cantonment slaughter-houses allow the contractors to remove blood and intestine from the slaughter-houses. The income to the municipality was Rs. 1,600 last year. The income is not certain as much depends upon the demand in Europe and the transport facilities.

(v) Horn.

Horns of 118,429 animals are available annually, and of these about 7,052 are buffaloes and 16,071 are cows. Horn is used (500 maunds) in Lucknow (only buffalo horn) for the manufacture of combs, but of a very inferior quality. The rest is exported. In Europe they use horn for the manufacture of buttons and handles of different articles (they do so in Dacca also) and combs. For comb making they treat horn both chemically and mechanically to counteract the tendency to bend in hot and cold weather,

(vi) Cattle Census.

	Cows and buffaloes.	Bull and buffaloes.	Calves.	Sheep.	Goats.	Others.
1. Lucknow tahsil.	32,844	45,776	24,654	8,619	17,024	2,637
2. Malihabad	30,565	46,278	32,990	7,196	17,875	2,865
3. Mohanlal-ganj	27,698	33,960	29,195	5,679	13,144	2,351
Total whole district.	91,107	122,919	96,839	21,493	48,043	7,853

5.—Labour and Capital.

(i) Banking.

Lucknow being the centre of Taluqdari life has, many banks and private mahajans or bankers to advance money to the rich on the guarantee of landed property or jewellery. The mahajans are of all kinds from the well organized banking department like that of Munshi Bishan Narain Bhargava to the itinerant bankers advancing money to the poor. Besides these banks and bankers there are the Central Banks at Lucknow and Mohanlal-ganj of the Co-operative Department. Bank rate is from 9 to 12 per cent. But the Banks offer no facilities for long term accommodation necessary for incipient industries.

(ii) Labour.

From the report of the District Census Officer it appears that labour is usually sufficient to meet the requirements, but during the time of harvesting some difficulty is felt by employers of seasonal labour like the building and road contractors. There is no evidence that factory labour is unpopular here. The Paper Mills and the Railway Workshops have no difficulty in getting labourers. The city labourer is better off than a small-holding tenant. Wages have risen, but there is no rise in the standard of living except in the case of blacksmiths and carpenters.

Labourers in most industries do fitful work and stay at home whenever they earn something. Local men are being replaced by Punjabis in carpentry and blacksmithy. Women are employed in all kinds of work, but they are paid wages lower than men. There is no evidence, however, that women are replacing men in industrial occupation.

The Census Officer has worked out figures to show that the employment of women does not seem to have affected the birth-rate of the district.

CHAPTER III.

General description and suggestions for improvement of the various industries of the district.

1.—Art industries.

(a) Chikan embroidery.

Chikan work is a kind of embroidery done with white thread on some white, transparent, thin, washing material like linen or silk. The varieties are of designs and can best be appreciated by actually seeing them. They have been described in Silberrad's monograph on cotton fabrics and also by Mr. Burrows in his note on Chikan.

Organization.—The *karkhana* system does no longer prevail and the work is done by men and women at their leisure in their homes. The expert workers act as agents. They get materials from the Chikan dealers and distribute the work to different workmen whom they know and collect when finished. They get one anna per rupee as commission. Besides these workers, there are topi makers who buy their own material, make topis (caps) and sell them. Women play an important part in this industry. The *purdanashin* women of the erst-while well-to-do families can produce very good work, but they are all paid very low wages and the quality of their work is deteriorating.

Marketing and advertisement.—There are numerous shops of Chikan dealers in Chowk (Parchewali Gali) who retail as well as export to Calcutta, Bombay and Behar. These things, especially topis, are in great demand in Behar. There are some merchants in Calcutta and Bombay who get things from Lucknow and export to England and America. The local dealers have no special method of advertisement. They only keep printed cards, giving their names and the names of available

articles without prices. The real business is in export, and here these dealers act as mere agents of the outside merchants.

General remarks and suggestions — The industry is decaying. The lot of the workers is pitiable. They are paid very low wages. The dealers have a monopoly, but are doing nothing to improve the industry. Most of the workers are working as domestic servants doing Chikan work during their leisure. The wages are so low as 2 annas per piece, which will take at least one day if not two.

The following are the main causes of decay : —

- (1) Competition of cheap machine made embroidery of Germany and Switzerland.
- (2) The change in taste with the non-co-operators. Chikan tops are at a discount.
- (3) Lack of enterprise in the dealers.
- (4) The use of inferior material. The cloth has to be subjected to continual washings during use and it ought to be strong. Cheap English mulmull is not a good substitute for fine linen. "The work is too fine for the material used."

The two main needs are better organization both of production and sale and of getting good material. The workers need to be paid higher wages so that they may put their heart into the work and the modern markets need to be studied for fresh designs, etc. Some enterprising capitalist should take up the work, and if he can ensure a regular supply of good work at a fixed and reasonable price, the European and American markets will be enough to make him flourish. There is demand for good work if some one can take advantage of it. In the present state of the industry organization of the workers is not possible.

(b) *Clay modelling.*

Some very artistic clay modelling used to be done in Lucknow, but unfortunately the master workmen did not properly train their apprentices, and the result is that only three experts are now living and all of them have been engaged by the Arts and Crafts School to save the industry from ruin. They have

been trained by the Principal to make statue-like models, and these have been appreciated much. They fetch from Rs. 60 to Rs. 250 each. Besides clay figures clay fruits are also made and they are very much like the original fresh ones. The work of these artists is good, but the rest of the things offered in the market are not at all artistic.

The training of the Kumhars' sons in the school will again create good artists. Training is badly needed and every encouragement should be given to intending students.

The packing of these articles should be improved. If some baskets, etc., could be devised in which these things could be packed and sent by rail and ship, then the sale of these articles could be increased enormously. Heavy weight of the articles is another impediment in their export.

(c) *Gota or Gold and Silver Lace making.*

Gold and silver lace woven like cotton with silk or fibre yarn is used by Indian ladies as borders for dresses and also used as borders for many articles like table covers, tray covers, etc.

Gota industry is also on decline and has been very much affected by the non-co-operation movement.

Laces are of various kinds described by Mr. Gwynne. Besides Lucknow Gota there is in the market a kind of Gota "Jhunta" or imitation in which silver wire is not used, but smoked lead or copper wire. It is imported from Ahmedabad or Germany and is not made in Lucknow.

Organization.—There are *karkhanas* where the workers weave Gota under the eye of the master weaver who gets material from the mahajan or dealer and supplies his own instruments and silk or fibre for warp. He has the men under his control by the system of advances and no one can leave him unless the advance is paid off. There is an understanding between Gotawalas and the Karkhanadars not to take any one in service who owes anything to any other Karkhanadara. Women also weave Gota, but of very thin variety as they do not use any loom.

Marketing system.—Gotawalas have a monopoly and they are reputed for dealing in genuine things on account of their keeping on the practice of melting silver into rods (*kandlas*) at a common place to ensure quality. Out-station orders are booked by V. P. P. unless the purchaser is a merchant with whom credit transactions take place. There is no system of advertisement and they depend upon their exertions to get orders from taluqdars or upon the petty dalals who roam about in Chowk trying to get hold of unwary purchasers. They always make common cause with dealers in raising the prices of the articles.

Profits.—

	Rs.	a.	p.
Cost of Badla 50 tolas at Re. 1-8	...	75	0 0
Cost of silk 20 tolas at Re. 0-8 per tola	...	3	12 0
Wages for 70 tolas	...	6	7 6
		<hr/>	
Total cost	...	85	3 6
		<hr/>	

This will sell for R. 96-4-0 leaving a profit of Rs. 11-0-6 or about 13 per cent.

Season.—The work is in unusual demand during the marriage season. It is carried on throughout the year.

Suggestions.—The industry is declining for two reasons—change of taste and the high cost of living. Temporarily the non-co-operation movement has also affected it much. The Arts School should be able to find uses for the articles just as it has found uses for many other artistic productions of the province. The change of taste is affecting much and unless things of modern use can be made from Gota (e. g. Ustu work on broad lace can form many articles of Drawing room decorations) the industry cannot be sustained for long by the old fashioned customers alone with whom money these days is not in abundance. The Gotawalas have a monopoly and no organization of the workers will be possible without disturbing them and in a decaying industry the workers cannot stand their opposition.

(d) *Gold and Silver manufactures.*

Silver and gold are imported in bars from Bombay and Cawnpore and are also locally refined. Gold is used for making

jewellery and there is no speciality about it, but Lucknow silver ware is famous—the Jungle and Dhaniya patterns which can be worked on all kinds of articles. The dealers are mostly Rastogis, although the biggest among them is an Agarwal—by name Khun-kunjee. As it is customary to get ornaments made by the family sonars, there is considerable trade in gold and silver metals.

Organization.—The manufacturers are all sonars who have either their own shops where they make goods to order or are paid servants of some of the firms in Chowk.

Marketing and advertisement.—There are shops in Chowk and Hazratganj where ready-made silver wares are sold. They issue catalogues and advertise in papers. Very little wholesale trade in silver ware is carried on.

Profits.—The profits of the sonar are proverbial. They are usually 15 per cent. on goods made to order and 25 per cent. on ready-made goods.

Suggestions.—Some system of Hall Marking is necessary to ensure quality. This was one of the objections raised in England when the Arts School Emporium offered some Lucknow wares for sale in the British Industries Fair, and this is why large export business is not transacted and people come personally to make the purchases. Old fashioned designs are now out of date except as decorative articles and people prefer the plain English Hall Marked goods or electro-plated nickel silver ware for utensils and other articles of utility. Polishing machines will enable workmen to produce goods like the imported ones, and some firms in Calcutta and Bombay are manufacturing such goods with the help of the machines which are used by Indians.

(e) *Other industries allied with gold and silver ware.*

Under this head I shall describe the following industries:—Kundansazi, Mulammasazi, Minakari, Nyaria, and Bidri maker. The workers are few and the trade is not all regular, so no idea of their outturn can be had. Most of the men engaged in the industry are mere wage earners.

Kundansazi.—It is an industry for the production of flattened gold wire used for setting precious stones on ornaments. A Kundansaz melts some Kundan, i.e., the purest form of soft gold,

melts it in the shape of a pencil and draws out a wire by means of the *jantri*. The wire is about 1/20th of an inch thick. This wire is heated and beaten out in the shape of a tape 1/4th to 1-6th of an inch wide.

There are about 30 Kundansaz and a man can produce 1/2 to 2/3 tola in a day. Flattening machines can easily be introduced.

Mullammasazi.—This is the process of covering silver ware with gold leaf and copper or brass ware with silver leaf. The silver leaf is made in Lucknow or is imported from Delhi which is Indian-made, and from Bombay or Calcutta and Delhi which is foreign. Gold leaf is mostly imported.

For gold plating the article is overlaid with a mixture composed of mercury and gold and heated. Gold leaf is then applied and pressed with a cotton pad.

Silver plating.—The surface is roughened and covered with silver leaf. The article is heated and the leaf rubbed. The plater has gone out of count as very little plating of this kind is done these days. They are engaged when a Raja wants a silver chair or howda plated.

Nyaria.—The Nyaria buys sweepings of sonars' shops, and washes them to remove dirt. He grinds the mixture of stone particles, etc., and melts them with lead. He remelts the solid mass in red hot ashes of Pipal wood and the bellows is applied and the metals separate, gold and silver coming out together as an alloy.

Separation of gold from silver in the alloy is brought about by addition of nitric acid, which dissolves the silver and leaves gold back as a fine deposit. Silver can be recovered from the nitric acid solution by putting in copper, preferably pieces of copper sheet, on which silver forms a white deposit and an equivalent amount of copper goes to solution.

There are 40 shops of Nyarias in the city. No estimate can be formed as they do not keep accounts of their outturn and did not give me any average as they said that would be misleading.

His income is about Rs. 5 per 100 rupees' worth of rawa or sweepings refined.

(f) *Gold and Silver Wire Industries.*(i) *Wire drawing.*

This is the process of reducing silver bars into wires. Two processes are involved—Kandalakashi and Tarkashi. The Kandalakashi makes Guchhi or thick wire about 1/10 inch thick. This is drawn out into very fine wire by the Tarkashi. For Kandalakashi they have the old instruments described by Mr. Gwynne in his monograph on wire and tinsel. For Tarkashi they now universally use the metal disc instead of the *jantri* and two sets of *phirkis* as described by Mr. Gwynne.

Organisation.—There are *karkhanas* or small factories where the head owns the instruments and gets silver from the mahajans. He distributes wages to the workmen on piece system. There are individual workers also who have no *karkhanas*.

Improvement.—Machines can easily replace the cottage worker and they are existing still because the dealers have not brought in machines, and they do not get machines as they think that they will not get the same quality. But this is a wrong notion. They are getting work done very cheap and do not bother about improvements.

(ii) *Badla making.*

Tarkashi wire is given to the Badla maker. Badla is a flat wire and is used for (1) making Salma, (2) Gota and (3) Kamdani work; Kamdani ka Badla is flatter than Kinari ka badla (for Gota).

Organization.—Women and old men are commonly engaged in the work and there is no *karkhana* system. There is no special system of marketing. They are sold by Gotawalas in their shops both retail and wholesale.

(iii) *Salma and Sitara.*

Salma is wire (Badla) twisted into different shapes—spiral, Gokhru, etc., used in Zardozi embroidery. Sitara is small discs made by beating out small cuttings from spiral salma. There is

a small hole in the middle for needle to pass. They are also used for Zardozi and are sold by Gotawalas.

Prices.—Rupees 1-10-0 per tola in which eight masha gold per kandla of 60 tolas has been used.

Rupees 1-14-0 in which 10 masha gold has been used.

Rupees 2 in which one tola gold has been used.

Organisation and marketing—Same as for Badla.

(g) *Kamdani.*

Conventional patterns of flowers and stars are stamped on piece of silk or muslin. The workman uses flat wire, diwali, threaded on a needle, and embroiders the pattern with the wire in the same way as with silk. It differs from Zardozi in which figures or patterns are "printed on the cloth to be worked" and "embroidered with needle and thread."

Organisation.—There is the *karkhana* system as well as shops of individual workers who work with the members of their family. They do work both for the dealers as well as for customers.

Marketing.—Kamdani topis and dupattas are in demand and people get them made very often. But these cannot be stocked long as they get tarnished after some time.

Profits.—12 to 15 per cent.

Suggestions.—There does not seem to be any prospect of introducing the co-operative system, except for co-operative credit. It would be risky for the men to stock things manufactured by them. The effect produced by Kamdani work on dress pieces, etc., is very good, and it would be worth while trying to introduce European dress pieces with Kamdani work.

(h) *Manufacture of Panni or Lead leaf.*

Thin sheets of lead are made in Malihabad and are used for covering lac bangles, chocolates and other sweets, cigarettes, soaps and garlands, etc. Lead is melted with a bit of copper (one piece to a seer) and bars called *kambi* are made by pouring it in grooves cut in a piece of stone. It is then made into strips

called *kachra* by means of a machine very much like the sugar-cane pressing machine put horizontally. The *kachra* is then beaten out into thinner and broader strips called *dual* which is then cut into pieces and each piece folded eight times. Several such pieces are then beaten on the anvil and *biri* or bundle of leaves are produced. A bundle or *gaddi* is of 2,000 sheets. The weight of each *biri* depends upon the purpose for which the leaves will be used. They are from $\frac{3}{4}$ seer to $3\frac{1}{2}$ seers.

Coloured Panni.—Red and yellow Pannis are usually made. The *pukka* process is to heat the leaves one by one on an oven. A mixture of lac, haldi (turmeric) and red dye called "Gulabi Janwar" is taken in a small *putli* (tied in cloth) and rubbed over the heated leaf. The colouring matter oozes out and colours the leaf. For yellow the red dye is not used and turmeric produces the colour. *Kucchi* coloured Pannis are also made in similar way, only resin is used instead of lac. The colour goes out by perspiration or by being rubbed against anything.

Organisation.—It is a cottage industry. The workers use their own material which they have to purchase from the mahajans. The mahajans have got two *kachra* making machines in which *kachra* is made and they charge wages for it. The workers get lead at Rs. 3 per seer, while the Cawnpore rate is Rs. 132 per maund of 46 seers. There are some workers who make *dual* only and are mere wage earners.

Marketing.—The workers dispose of their goods through the mahajan. The mahajans purchase things from them and send to the various merchants in Bareilly, Sialkot, Lahore and Peshawar. The workers are indebted to the mahajans. They have to sell their goods at a lower price than what they get from direct customers.

Suggestions.—The workers ought to be organized on co-operative basis. There should be a store for joint purchase of lead and through it the out-station orders should be supplied. The workers are living together and belong to the same brotherhood. They are selling Panni and purchasing lead and know all about the trade. Their difficulty is about capital which the co-operative society can easily get them. A machine can also be

introduced for *dual* making just as there is one for *kachra* making.

(i) *Manufacture of Silver and Gold leaf.*

A tola or two tolas of silver are cut into pieces and flattened. They are then put in between "Jhillies" (or membranous leather) specially prepared at Agra, and beaten on the anvil by means of the hammer. They are reduced to very thin leaves. They are used for coating Pan (betel leaves), sweetmeats and by Hakeems for medicine, and the thicker varieties for plating also in the old fashion (mulamma).

Organisation.—There are small workshops in Chowk where the workers are given the instruments and material, and on completing one *gaddi* (usually of 150) they are paid wages.

Profit—About 25 per cent. They are sold at about 6 pies to one anna each.

(j) *Zardosi.*

Is a special embroidery done with gold wire and articles made of gold wire on satin or velvet.

Organisation.—There are *karkhanas* where the employers or Karkhanadars have their frames and other instruments and get things manufactured by the men on piece wage system. There are other workers also who have no *karkhanas* and would go to any customer's place and make things out of the customer's material. The Karkhanadars get orders mostly from mahajans or Gota or Chikan dealers, who in their turn secure orders from rich people and Rajas.

Marketing.—Only some *topis* are kept ready made and the rest of the articles are made to order.

Profits.—12 to 15 per cent.

Suggestions.—The industry is in a decaying condition like all other art industries. No improvements seem to be possible as there is not work enough for all.

Dealers.—The Gotawalas are the dealers in Zardosi material and also in caps, etc.

(k) *The Emporium of the Arts and Crafts School, Lucknow, on the art industries.*

The opening of the Sales department in the Arts and Crafts School, Lucknow, has given a healthy impetus to the decaying artistic industries of Lucknow and other places in the province. The Controller, Mr. Heard, is trying to improve the art industries by selection of only the best productions and return of the rest with defects pointed out to the manufacturers. Clay modelling of Lucknow is an excellent example. The three Kumhars trained in the school are producing excellent work. Fard printing has also improved as the Emporium itself purchases a large quantity of the finest variety. Chikan embroidery is the principal industry of Lucknow, and Mr. Heard is particularly interested in its improvement. He is trying to have some designs standardised and then to increase the scale of production in those designs. This will be very good for export trade and will do away with the objection of the foreign merchants that no two articles are of a similar design. The need for a better material for the field of embroidery and better washing and finishing of the products is also receiving his attention. The local dealers have failed to bring about any improvements, rather the high profits demanded by them and their callous disregard for artistic merit have been the principal causes for the decay of these industries. The Emporium has come at the right moment.

2.—Building materials.

(a) *Brick kilns.*

Brick earth is obtained near Lucknow, especially on the Alambagh side where there are many *bhattas*. The *bhattas* are either *desi* or "Pajawa" in which the *kuccha* (sun-dried) bricks are arranged in alternate layers with fuel and fired; or "Bull's" kiln in which they are arranged in underground kiln and fired with cinder. There are two chimneys which can be moved and they are fixed at the place where a particular block of bricks is being burnt. When that block is burnt the chimney is removed.

Organisation.—Loniyas engaged on contract to mould bricks from the brick earth dug out of the ground taken on lease from the zamindar at about Rs. 200 per bigha. The labourers are mostly temporary except one or two mistris.

Marketing.—Same remarks as for lime.

Profit.—Cost of production of 100,000 bricks including carting expenses is about Rs. 900 to Rs. 1,000 and bricks of all the classes, if sold, will fetch about Rs. 1,500, leaving a profit of at least Rs. 500 per one lac bricks burnt. From this has to be deducted the proportionate cost of brick earth (royalty) and the recurring charge every alternate year for the chimneys.

Season.—The work is very dull during the rainy season.

Suggestions.—There is scope for expansion in this business, and it will pay those who can invest Rs. 10,000 to Rs. 15,000.

(b) Lime mills.

The making of lime by grinding, burnt kankar is a paying industry here and many mills have been and are being started. Kankar is burnt in two ways:—

- (1) A pyramidal structure is raised of alternate layers of kankar and fuel and the entire mass coated with mud. Then the last layer of fuel is fired and when the mud coating becomes red, it is broken and kankar is ready for being ground.
- (2) Permanent pucca kilns are made in which the first layer is of cinder and the last or the topmost layer of kankar. When the first layer is laid cinder is fired and other layers laid alternately. There is arrangement for draught in the kilns. As soon as one layer is burnt it is taken out and a layer of cinder and a layer of kankar added on the top and the process continues, burnt lime being drawn from the bottom. Permanent kilns are more expensive, but cheaper in the long run.

For grinding, they use either the bullock driven stone *chukki* or the power driven roller or disintegrator.

Organisation.—The labourers are employed on monthly and daily wages as in other factories. The work is seasonal as it

becomes rather difficult in the rainy season to burn kankar. Contractors who have regular construction work on their hands have invariably got lime mills.

Marketing.—Orders are booked with the mill owners who send lime to the customers' places in their own carts.

Profit.—Cost of production is about Rs. 18 to Rs. 19 per 100 c. ft. and it is sold for Rs. 23 to Rs. 25 per 100 c. ft.

(c) *Kanp or lime from lime earth.*

Lime deposits (*choor*) are found in Dularamau near Goshinanj on the Sultanpur road. They have been found fit for cement making. The Bhatta owners have contracted with the zamindars to dig lime earth for which they pay Rs. 400 per acre. This is carted to Lucknow (Hussanganj Par) and there made into small lumps by being mixed with water. These lumps are burnt like kankar and then thrown in tanks full of water. Lime is now ready. For rainy season they prepare cakes of *choor* instead of lumps in summer and store them and burn them when the rains set in and make it difficult to cart *choor* from Dularamau.

A kiln can usually produce 250 to 300 c. ft. of lime and annually a *bhattawala* can turn out 8,000 to 9,000 c. ft.

A *bhattawala* has to spend about Rs. 20 to Rs. 22 for preparing 100 c. ft. of lime, and this he can dispose of at Rs. 28, saving Rs. 6 to Rs. 8 per 100 c. ft.

It would be better if some capitalists combine to start a cement factory and prevent this waste. Messrs. Zaman & Co. are contemplating to start a factory and they are trying to get some concessions from the Government. The possibility of cement manufacture from raw material available within the district has been under investigation at the Government Technological Institute, Cawnpore. Publications of the results of the investigations will be interesting reading in this connection.

3.—Food grains.

Flour mills.

There are several flour mills, but none of the present mills is on a big scale. They are for job work and none of them grind

wheat for export. They cannot always get customers enough even locally as the price of wheat here is higher than at Cawnpore and Chandausi. Three months ago the Cawnpore rate for a bag of flour weighing 2 maunds was Rs. 16, while in Lucknow wheat was not available for Rs. 16 per bag.

4.—Haberdashery.

Manufacture of horn combs.

Combs for dressing hair are made in Lucknow from the horns of buffaloes. They have the defect of bending by both heat and cold. They cannot be stocked for long. They are not good and are not liked by the city people although they are quite popular in the villages and towns.

Process.—A horn is cut into pieces about 3 inches wide and these are cut into two. They are heated and straightened by application of pressure. After straightening thin slices are cut by means of a saw. Teeth are then made in each slice by means of the saw. The distance is regulated by the forefinger of the left hand.

Organisation.—They are all independent workers getting their own material and selling their products.

Marketing and advertisement.—The manufacturers sell their goods in their shops and even go out in the evening to the market and sell them. They supply out-station dealers on receipt of advance payment or cash payment.

Profits.—Cost of one maund of horn, Rs. 9. This can be turned into 200 combs at 3 annas each, i.e., Rs. 37. The difference of Rs. 28 is the earning of a family for the month.

Suggestions.—Comb making out of crude horn cannot be profitably improved unless some one with a letter training takes up the manufacture of combs, buttons, etc., out of the available raw material. The present workers do not know the use of any other instrument except the saw. Perhaps the ivory or bone workers can do better in making buttons and knife handles, but such workers are few in Lucknow.

5.—Hardware.

(a) *Metal utensils.*

Lucknow markets for metal at Yahiaganj and Daliganj are full of Farrukhabad and Mirzapur ware, because Lucknow's production is not enough nor does Lucknow produce all varieties of utensils. Copper utensils for Muhammadans alone are of chief importance, although some utensils for Hindus are also cast on moulds.

Both the beating and the casting processes are carried on, beating for copper and casting for kaskut (a mixture of lead and copper). Copper is imported while kaskut is mostly obtained from old utensils.

Organization.—There are small workshops of cottage workers who get materials from dealers and manufacture goods for them on piece wages. They engage journeymen labourers for turning lathes and working bellows. Commonly the family is the unit, but often several workers combine together and share the wage. There are some workers who use their own material and sell their goods.

Profit to the dealers.

For a *deg* weighing 36 seers—

		Rs.
Cost of copper, one maund	... ..	70
Wages for 36 seers	... ..	10
		—
	Total	80
Less price of cuttings	... ..	8
		—
Total expenses	... ..	72
		—

This will sell for Rs. 81 @ Rs. 2-4-0 per seer, leaving a profit of Rs. 9 or about Rs. 13 per cent.

Season.—All the year round. The demand is great in marriage season.

Marketing and advertisement.—There is no special system of marketing. The dealers are mostly retail shopkeepers, except

the Kothiwala who exports things outside and also imports in large quantities.

General remarks and suggestions.—The metal utensil industry is in a favourable condition. There is not much of foreign competition as the diversity of shape and size makes it difficult for foreigners to make them. The industry does not offer scope for machinery driven by power as the capital outlay would be prohibitive.

The cottage workers here make things out of old utensils and dealers exchange old utensils for new, a facility which no foreign manufacturer or big factory at one place can offer. The industry ought to be encouraged either by the organization of co-operative societies of the workers or by the organization of small factories where hand machines for some common processes can be used. In Lucknow the manufacture of copper utensils alone can be organized. The workers are all Tatheras who know the value of metals and have some business as well, and a co-operative society with a store for copper will prove successful. The following hand machines should be introduced to do away with some of the tedious processes :—

- (1) A better lathe which can do the work more quickly and with greater precision.
- (2) A machine to cut or punch sheets of copper into circular and oval discs of the required size.
- (3) A machine for shaping brass and copper vessels instead of the rough and tedious process of hammering them.

(b) *Iron works.*

The "Lucknow Iron Works" famous for its steel trunks and sanitary and municipal appliances does no longer exist, and now the Iron Works are confined to two small concerns for making municipal and sanitary appliances and for repairing parts of machines and engines. Besides these there are the country iron workers making utensils of iron. Lala Shiamsunderlal has both casting and forging departments. In the casting department there is the furnace where iron is melted and moulded in frames specially prepared for the wooden models made by the carpenters.

For the forging department they have a lathe—the biggest in Lucknow—and a drilling machine driven by steam engine. Mr. R. N. Sanyal has only forging department for sanitary appliances. He is a municipal and Government contractor for sanitary fittings.

(c) *Cottage workers.*

The workers are not in a flourishing condition but as the iron utensils are not imported they can command a sale always. Some of them have begun to make buckets of galvanised iron sheet.

(d) *Steel trunk manufacture.*

There are five shops manufacturing trunks out of galvanised iron sheets. They are not very good and only occasional visitors make the purchases. They make cheap trunks out of kerosine oil tins as well. An effort is being made by one firm to make big steel trunks fit for sea voyage and keeping warm clothing. They manufacture hat boxes which are even stocked by the fashionable shops.

6.—Leather.

(a) *Tanning.*

There are no tanneries run on modern lines in Lucknow, although there is enough raw material in the slaughter-houses. The indigenous Charra or hide tanners are centred in Molvigauj, Yahiaganj and Raneeganj and in the villages round Mohanlal-ganj and Mau. Some tanning is also done in Mal in Malihabad tahsil. They carry on tanning on the old method described in Walton's monograph on leather working in United Provinces. There are special tanners for sheep skins in Chikandi-Molviganj in Lucknow. Dyed skins are made for cheap fancy pumps.

Organization.—A *karkhana* of four or five men, usually members of one family or near relatives, is the unit. When people who are not members of a joint family work together in a *karkhana* they share the expenses and profits.

Profits.

			Rs.	a.	p.
Cost of 20 hides	...	...	140	0	0
Lime, 80 seers	...	...	0	10	0
Babul bark, 2½ maunds	...	...	2	0	0
Salt, 16 seers	...	...	1	2	0
Miscellaneous	...	...	2	0	0
Total	...	...	145	12	0

These will sell at Rs. 13 each fetching Rs. 260. Profit will thus be Rs. 124-4-0 or nearly 85 per cent. (inclusive of charges like interest on capital, proportionate expenditure on establishment, etc.).

Season.—The work is very dull during the rainy season.

Marketing.—Village tanners sell their hides in the bazars like the Mau bazar in Mohanlalganj and the local tanners have a market in Ohikmandi where the shoe manufacturers assemble every morning and at Nakkhas where the Chowk manufacturers assemble in the evening.

(b) Leather working.

Boots and shoes of English design and artistic shoes of Indian design are made here. There is very little of harness and saddle making. Hand-made goods of Lucknow chrome leather have acquired a reputation. They were first introduced by the firm of Messrs. S. C. Chatterjee and Sons, and the excellent quality of their goods is mainly responsible for this reputation.

Organisation.—The contract system is getting more popular as it saves the manufacturer the worry of supervision, and the workers manufacture either to order or sell their goods as best as they can.

Some of the big firms, Messrs. Carlton and Company and the Lucknow Boot and Shoe Factory have branches at Calcutta and agencies at many big towns in Bengal and Burma. Others supply out-station merchants on cash or credit payment as their relations with the purchasers may be. Individual orders are booked by V. P. P.

Profits.

In a pair of brown chrome leather shoe—

	Rs.	a.	p.
1. Upper leather about 2 sq. feet ...	2	0	0
2. Leather for Addi toe cap and insole about 1½ sq. feet ...	1	0	0
Sole leather 1½ sq. feet ...	}	}	}
3. Lining leather half 1 squire foot ...	0	2	0
3(a). Lining canvas half 1 sq. foot ...	0	3	0
4. Heel pieces and welting ½ seer ...	0	8	0
5. Eyelets ...	0	0	9
6. Yarn ...	0	1	6
7. Finishing charges ...	0	4	0
8. Wages ...	1	0	0
9. Cutter's wages ...	0	2	6
10. Upper sewing wages ...	0	1	3
11. Nails ...	0	1	0
12. Depreciation charges for lasts, etc. ...	0	3	0

Total for a pair of brown shoes ...	5	11	0

This will sell for Rs. 7-8-0 to Rs. 8-8-0; and if better finished and brogued it may fetch Rs. 11 to Rs. 12.

The percentage of profit ranges between 30 and 50 per cent.

Season.—The demand for canvas is great during summer. Demand for shoes increases in winter.

Co-operative societies.—The Udaiganj *mochis* have a credit society which is doing well, but there is no society for co-operative sale or production.

Suggestions.—For cheap pump and other shoes machinery would be better and it is waste of labour to manufacture these shoes by hand. But for superior shoes the hand-made ones will always be preferred, as they last longer and can be made of any design. Even here machinery can be introduced with advantage except for stitching. The following improvements are suggested in the present state of the industry.

Leather artisans should be taught modern methods of—

- (i) taking proper measurements.
- (ii) the art of leather cutting.
- (iii) of making lasts.
- (iv) finishing the leather goods.
- (v) examination and selection of leather.

Some arrangement will be desirable, which will offer an opportunity to these cottage workers to get to know current requirements in leather goods of to-day's fashion. It will be an advantage to the artisans if they can learn the use of modern handy machinery used in the manufacture of leather goods.

The independent contract workers may be induced, with advantage, to work on a co-operative basis, which will facilitate the purchase of materials, give scope to specialization in the different processes and stages of the industry, resulting in economy which will certainly add to the profits of the industry, ensure nearly equal work according to ability for the constituents of the co-operative organization and offer satisfaction to the variety of customers for whom these goods are made. A store for the supply of material ought to be a success because they can then contract with manufacturers to supply them as usual at wholesale or quasi wholesale and necessarily cheaper prices.

7.—Miscellaneous.

(a) Jail industries.

Munj matting.—

Number of prisoners engaged daily—36.

Output.—89 mattings weighing 285 maunds 34 seers.

Raw material used.—Munj 413 maunds 10 seers at Rs. 3 per maund. Obtained from Mohan Lal Jwala Pershad, Kasganj (Etah).

General remarks.—Central Jail is the only place where munj mattings are made in Lucknow and the jail supplies mattings both to Government offices and to private persons.

Price of mattings. Rupee 1, Re. 1-8-0 and Rs. 2 per square yard.

Garha or dosuti cloth.—

Number of prisoners engaged—16.

Outturn.—20,076 yards weighing 104 maunds 11 seers.

Raw material used.—107 maunds 20 seers, 12s counts at Rs. 8-12-0 per bundle of 10 lbs.

Obtained from.—Ram Bux, a local merchant.

Price.—Eight annas per yard.

General remarks.—*Garha* and *dosuti* are utilised in the jail for prisoners' clothing and some dusters are supplied to the Government offices.

Durries and carpets.—

Number engaged—25.

Outturn.—231 carpets and durries weighing 29 maunds 10 seers.

Raw material used—33 maunds 16 seers at Rs. 8-12-0 per bundle of 10 lbs. cotton,

Obtained from.—Ram Bux, a local merchant.

Price.—Rupees 2-8-0, Rs. 3, Rs. 3-8-0, and Rs. 4 per seer according to design. A prisoner can produce 2½ feet a day plain and 4 inches of flowered carpet.

Ordinary size of a carpet.—7' × 4' weighing 9 seers.

Ordinary size of durrie.—7' × 4' weighing 2½ seers.

The carpets are very artistic and are taken away by European firms for export to Europe.

Woollen blanket.—

Number engaged daily.—182 including spinners.

Outturn.—2,590 blankets weighing 179 maunds 9 seers.

Raw material.—Wool weighing 220 maunds 30 seers at Rs. 24 a maund.

Obtained from.—Kadir Bux, a local merchant.

Price.—Rupees 5-8-0 each, size 7' × 4'.

Blankets are made on a loom 5½ feet wide and each blanket is 92 feet long and is cut into smaller blankets. The blankets are used for prisoners. The Jail Superintendent, Colonel Clement, has invented a new kind of bobbin and shuttle which takes much more woollen yarn.

Remarks.—If the jails are to be used for large scale production on a commercial scale then the different Central Jails should specialize in different industries. Lucknow should take cotton weaving and munj matting. The waste of labour in pumps, oil *kolhus*, etc., should be stopped and as many as possible should be employed in industries. To make prisoners work some encouragement should be given to industrious ones. There should be a special officer to look after commercial side of the jails.

(b) *Printing Presses.*

There are printing presses of all kinds in Lucknow from the Lithographic Urdu press to the power driven printing machines.

In the lithographic system the matter is written on a specially prepared paper (French paper) and then transferred on a piece of stone with a smooth surface (this is a special kind of stone imported from Germany). On this moist paper is pressed and it is printed.

For machine printing they have—

- (1) Hand press.
- (2) Treadle machine worked by both feet and power.
- (3) Big machine worked by hand pulley or power.

Besides these simple machines there are special appliances in use in some of the presses :—

1. *Self-feeding machine.*—In which the paper to be printed is put under the machine automatically.

2. *Double feeding machine.*—In which both sides of a paper are printed, the paper coming round after one side has been printed.

3. *Linotype machine.*—This is a contrivance for automatic composing of the matter. The machine is worked by electricity. There is a keyboard like that of the typewriter and by pressing the keys the letters are arranged in a line. These are then passed on to the mouth of a furnace which pumps out molten lead and a bar of solid lead is formed with the composed letters imprinted on it. Such pieces of lead are then fixed on a frame and put on the printing machine.

(1) and (3) are in the Methodist Publishing House and (2) in the Newal Kishore Press and Steam Printing Press.

(c) *Tobacco.*

(i) *Chewing tobacco.*

For chewing tobacco they prefer the long leaf grown on saltish soil as they want the proportion of nicotine to be considerable. They sift the powder of the leaf proper by means of a sieve and throw away the stems and veins. This rejected stock is purchased by manufacturers of smoking tobacco. The pounded leaf is mixed with Kivam, and spices are added from time to time. Some spices are added to Kivam which is tobacco leaf boiled to a syrup consistency. This is how *zarda* is prepared. For Kivam proper they mix all the spices in the boiling liquid which is boiled down to a paste, and for this the very best kind of leaf is used. Out of this Kivam they make small globules and coat them with gold and silver leaf.

Organization.—Same as for smoking tobacco, but here the employer himself gives more attention to the manufacture as the prescriptions are supposed to be secrets.

Marketing.—The manufacturers have all their own shops and sell in measured tins for retail. They carry on an extensive export business, especially by means of the V. P. P., and also supply large orders to Calcutta and other towns in Bengal and Behar. The firm of Asghar Ali and Muhammad Ali has a branch at Calcutta. They issue price lists for advertisements and send their goods to the various exhibitions.

Profits.—About the same as in smoking.

Season.—They want to finish the work before the rains, because they cannot dry the leaves and freshly prepared *zarda* and *goli* easily.

Suggestions.—Machines can be used for all the processes. But no such machine exists and Mr. Ahmad Husain, proprietor of the famous firm of Ahmad Husain Dildar Husain, is trying to get a set of machines for crushing leaves so that the stems and veins may be automatically separated after the leaf is thoroughly

crushed. He has written to all engineering firms in India and is very keen on getting such a machine. Similarly he wants a Kivam mixing machine and globule making machine.

The business is very profitable to those who can establish a reputation.

(ii) *Smoking tobacco.*

Smoking and eating tobaccos of Lucknow are famous. Leaves are crushed with *musal* (a pestle) and stems are crushed in lime mills. *Shira* is then mixed (1½ maunds *shira* to a maund of tobacco). For better quality they mix leaves of various places Sitapur, Bahraich, Behar and Bengal—in different proportions. After adding *shira* they divide the mass into blocks and add *khamira* and spices in different proportions, some being for mild and some for strong tobacco. Water is occasionally added during the time of pounding and some *sajji* is also added with *shira*. All this increases the weight. When a customer orders for some particular kind of tobacco they mix some from one block and some from another according to his order for *shsera* or a rupee per seer, *deera* or 8 annas per seer, *chousera* or 4 annas a seer, and for *karua* or strong, *dorasa* or medium or *mitha* or mild tobacco.

Organisation.—Labour is paid by time either daily or monthly. They prepare tobacco under shopkeeper's supervision. There are also small shopkeepers who prepare and sell tobacco themselves.

Marketing.—Every manufacturer sells tobacco at his shop in retail. Wholesale business is not common except for the qualities mixed with *shira*. These are purchased by many who want to avoid the tedious process of pounding. The business is not so very profitable unless one manufactures the things himself, and for this reason and because the manufacturers do not allow good commission wholesale export business is inconsiderable. Parcels to individual customers are of course daily sent by the famous dealers.

	<i>Profit.</i>		Rs.	a.	p.
Tobacco leaf, one maund of 46 seers	15	0	0
<i>Shira</i> , about 70 seers	7	0	0
<i>Khamira</i> , about 2½ seers	0	8	0
<i>Sajji</i> , 2 seers	0	1	0
Spices	2	0	0
Labour	2	0	0
Total		...	26	9	0

Weight of tobacco prepared, 46-70-2½-2-5 (water), 126 seers.

This will sell at 5 annas per seer fetching Rs. 39-6-0.

The profit is thus Rs. 12-13-0 or 30 per cent.

Season.—The preparation is rather troublesome in the rainy season.

Suggestions.—Two machines, one for the crushing of the leaves and the other for the pounding of the leaves with *shira*, are necessary to save the waste of labour.

Along with the making of smoking tobacco, I would like to point out the possibilities of cigarette and *biri* making. A factory was started by the talukdar of Gopalkhera some time ago, but it did not prove a success for want of proper organization. If very good cigarettes cannot be made at least the cheaper ones like 'Red Lamp' and 'Pedro' can certainly be made here along with *biri* which is now in fashion.

N.B.—Spices and *khamira* used are :—

Spices.—Jao javitri, saunph, laong, ilaechi, mushk, etc.

Khamira.—Fruits like apples, pineapples and plums are crushed and boiled with *shira* and buried in jars in the ground for at least 3 months. The best *khamira* is that which has been kept for about a year.

Shira.—They prefer the *shira* that comes from country sugar refineries as it contains a greater proportion of sugar in it.

(d) *Minor industries.*

(i) *Lens making for spectacles.*—There are about five workmen who can prepare lenses out of blocks of pebble or crystals.

glass. They cut slices by means of a bow strung with a steel wire and then grind them with the dust of precious stones. They specialize in cataract lenses which are sold in large numbers by local firms—Ibrahim & Co. and Yakub and Co., Chowk. The local opticians usually stock imported lenses, but for special prescriptions they get lenses locally made. The lens makers are good at their work and some optician of Lucknow ought to get a machine and get all lenses locally made on a large scale.

(ii) *Manufacture of sirka and arak or spiced water.*—There are three firms—Manna Lal Ram Adhin, Patenala, Masita Bagh and Hafiz Abdul Wahab of Subatiabagh,—who manufacture sirka and arakana out of shira and spiced water out of aniseed, mint (pudina) and sarsaparilla (makoi). They distil fermented solution of spices or shira in the same way as perfumers distil scents. They manufacture these things for medicinal purposes, for beverages and for preserving pickles (sirka). These things are exported to the neighbouring district.

(iii) *Yarn for kite flying.*—Kite flying was the most fashionable amusement with the Nawabs of Lucknow, and even now enough money is wasted on this hobby which supports some people to earn their living. There are about thirty families of Julahas in Daliganj whose women spin cotton yarn. The spinning is not done from cotton, but three to sixteen strands of mill yarn are spun together. These are dressed by the men in their leisure and made into balls weighing about half a seer and sold to the kite merchants. "Manjha" is made by rubbing powdered glass and other spices on mill spun yarn, and is superior to ordinary string.

(iv) *Cane weavers and basket makers.*—There are about 100 cane weavers in the city in small colonies in Golaganj, Hussainganj and Ashrafabad. They prepare tiffin baskets, chairs, tables and other baskets. The frame work is of bamboo, and they do not make all cane baskets seen in European shops. They get cane from local dealers like Messrs. Ghasee Ram and Co., Sudder Bazar, who import from Bahraich and Calcutta. The cuticular portion of the cane is used for weaving backs and seats of wooden chairs and the remaining is used for other

things. They are capable of preparing better things if organized, but they are much addicted to drink and would not improve.

(v) *Hukka making*.—There are about 20 shops in Lucknow who make *hukkas* from cocoanut shells. Cocoanut shells are imported from Bombay and Madras and the stem or wooden pipe is made by the lathe man in Patenala. The *hukkas* are used by Hindus and are common among the villagers. The dealers are in Hukkagali, Yahiaganj and Daliganj, and at least 5,000 shells are imported annually for this purpose. The price of a *hukka* varies from 6 annas to Re. 1.

(vi) *Kuppi, sares or glue and gut making*.—The raw materials for the above industries are the bye-products of the slaughter-house, and some of them are utilized in Lucknow. In Mr. Hoey's time the industries seem to have flourished, but the increase of export of raw materials to Germany and the import of finished goods from Europe have now reduced these industries to insignificance.

Kuppi.—These are small flasks of leather in which the perfumer sells scented oils. They are cheap and very convenient as they do not break.

They are prepared from the indodermical portion which is scrapped out when the hide is being prepared for tanning. This is membranous and somewhat porous and undergoes no tanning.

Glue making.—Glue is made by boiling scraping of tanners and other refuse of the slaughter houses till a syrupy liquid is obtained. This is then drained off in another vessel and before it hardens pieces are cut. There are about ten families producing about 40 maunds annually.

Gut making.—The import of guts and the manufacture of the better varieties in the Punjab have reduced this industry to insignificance and very little is now made for use in cotton carders' bow and for fireworks.

(vii) *Scientific instruments*.—The Scientific and Technical Workshop, La Touche Road, Factory, Naubasta, manufacture wooden and metal scientific instruments like callipers, calorimeters, etc. They also stock scientific instruments. Their instruments are quite good and are used by schools.

(viii) *Boot polish*.—Mr. J. N. Banerjee, B.Sc., has succeeded in manufacturing very good boot polish which compares favourably with imported material. He was in need of soap and he has been successful in preparing soap as well. His scale of production is small for want of capital, but I hope he will not be hampered by this need for long. He manufactures both black and brown polishes.

(ix) *Ink manufacture*.—Mr. M. L. Gupta and Messrs. P. Cool & Co., manufacture writing ink which serve the purpose quite well, but further improvements are necessary to make the ink perfectly "Blue Black". They are supplying the market in large quantities, as Stephens' Ink is very expensive now.

(e) *Electricity*.

Lucknow is supplied with electricity by the United Provinces Electric Supply Company, Ltd., managed by Messrs. Martin & Co. of Calcutta and subsidized by the Lucknow and Allahabad municipalities. Electricity is used for lights and fans and also for industrial purposes of working flour and saw mills. Water pumps for the Government gardens are also being worked.

Charges—

(1) Eight annas per unit (220 volts) for domestic purposes.

Heating and cooking stoves, 8 annas per unit. A discount of 25 per cent, is allowed if bills are paid on or before the 15th day of the month.

(2) Meter hire, Re. 1 per month. Minimum charges, Rs. 5.

For manufacturing purposes—

Rate "A".—A motor up to 2 H. P. worked during the day only 5 annas per unit (220 volts).

Rate "B".—For motors above 2 H. P. 4 annas per unit for working during the day only.

Metre rent.—Re 1 per month.

Minimum charge—

	Rs.	a.	p.	
"A" rate	...	3	0	0 per month
"A" " "	...	1	8	0 up to 20 H. P.
"B" " "	...	1	0	0 above 20 H. P.

Special rates can be arranged for big concerns. The rates are rather high, and the flour mills do not find electricity cheaper than oil engines, except in the initial cost.

8.—Oils.

Oil crushing is not done anywhere on any scale except some in Lucknow by the *telis* of Telpurua, Hussanganj, Bibiganj and Mehdiganj. The *telis* are mostly engaged in some other work like the railway workshop or grocery shop and carry on oil crushing only as a supplementary source of income.

Marketing.—The *banias* and bawkers purchase oil in the morning from the *telis*. The *telis* also sell oil to customers who come to them for the sake of the pure oil.

Profit.

	Rs.
Price of 6 maunds of seed at Rs. 8 per maund	48
From this he will get 2 maunds of oil	... 48
And 4 maunds of <i>khali</i> or oil-cake	... 25

The profit is thus Rs. 25. Deducting the expenses on cattle he would get Rs. 15. This will be his monthly income.

Season.—It is brisk during the time when seeds come to the market, but crushing of mustard seed goes on all the year round.

Suggestions.—There is not much scope for the *telis* as oil-seeds are not abundant. There is an oil mill which has met with much difficulty about oilseeds which it has to stock from Haldwani, etc., as the supply in Lucknow is very poor.

9.—Other industries connected with edibles.

Dairy farming.—There are three Dairy Farms, but only one of them is on a large scale, the others are not farms at all.

A modern dairy makes the following products : cream butter, cheese.

Ghee.—Dairies do not prepare *ghee* in the usual course, but melt stale butter if some is left unsold. The cost of this *ghee* is higher than that of the bazar *ghee*.

Quantity of milk required.

For 1 lb. of cream	...	10 lbs. of cow's and 8 lbs. of buffaloes.
For 1 lb. of butter	...	12 lbs.
For 1 lb. of <i>ghee</i>	...	18 lbs. for dairy process and 10 lbs. for country process.

100 lbs. of skim milk will yield 75 lbs. of curd and 25 lbs. of whey.

The following will give an approximate idea of the milk of dairy cattle:—

Composition of cow's milk.

1. Water	...	...	8.6 per cent.
2. Fat	...	...	4.5 " "
3. Proteid	...	...	3.3 " "
4. Sugar	...	...	4.8 " "
5. Ashes	...	...	.7 " "

Composition of buffalo's milk.

1. Water	...	...	82 per cent.
2. Fat	...	...	8.1 " "
3. Proteid	..	...	4 " "
4. Sugar	...	...	4.5 " "
5. Ashes	...	...	.7 " "

Organisation.—The Lucknow dairies get their milk supply from their own cattle reared by paid Ghosis, and when the supply is not sufficient they get milk from Ghosis whom they pay in advance and call "Asamis." There are two cream separators one in Sultanganj and another in Arjunganj. The Ghosis of these places supply milk for purposes of cream making and are paid for their milk on the basis of cream found in a seer of milk.

Marketing and advertisement.—The dairies here do not tin butter and their sale is mainly local except for a few orders from the neighbouring districts. The dairies have carts and men for the distribution of milk to customers morning and evening. They publish hand-bills for advertisement, but depend more upon personal canvassing.

General remarks and suggestions.—*Ghee* prepared by the dairy method costs much more than bazar *ghee* because :—

- (1) The quantity of milk required for making 1 lb. of dairy *ghee* is nearly $1\frac{1}{2}$ times what is necessary to make 1 lb. of bazar *ghee*.
- (2) The cost of maintenance of cattle in the country is nothing as compared with what it costs a dairy farmer in the city. In the villages they have common grazing grounds where even a boy servant is enough to watch the cattle.
- (3) *Adulterations.*—Pure *ghee* of the country cannot be sold at less than Rs. 2-8-0 a seer, while dairy *ghee* sells at Rs. 3; but usually we find *ghee* selling at Re. 1-12-0 and even Re. 1-10-0 per seer. This *ghee* is very much adulterated.

There is a scarcity of milk supply and further of good milk supply. There are no organizations of these Ghosis like those in Denmark to supply milk on co-operative basis. Such an organization may do something to increase milk supply. The Ghosis and Ahirs are very poor and they cannot sufficiently feed the cattle or keep them during the period they run dry. There are no good grazing grounds and no attention is paid to improving the breed of cattle. The number of cattle is not lower per man here than in other countries, but the yield of milk per cattle is very low.

10.—Textiles.

(a) *Calico printing.*

In Lucknow they print very artistic quilt covers (lehaf) imitation *jamewar* pieces for *achkan* (coats), etc., table covers, curtains, pillow and cushion covers, etc. Twill, longcloth and

nainsukh are the most common fabrics for cotton pieces and Azamgarh satin for silk.

The process has been described by Mr. Hoey in his monograph on the industries of Northern India (Lucknow). Each piece takes about a year to be ready. It is printed in different colours and each time a particular colour is printed the piece goes to the *dhobi*. A great deal of precaution is necessary at the time of printing. Atmospheric humidity affects the printing and the work practically stops during the rainy season.

The making of new designs is very expensive. The firm of Kallan Khan Rasul Bux has spent over Rs. 1,500 in getting two sets of blocks prepared after the Farrukhabad design for curtains.

Dyes.—They use both vegetable and synthetic dyes. For blue and red they use chemical dyes instead of indigo and "Al".

Organisation.—The *karkhana* system of giving advances prevails. Wages are rather low and they are paid according to design. The more intricate a design the higher the wage. Those who get complicated designs are experts, but if they depend upon the printing of intricate designs alone they would earn less. They usually make up the deficiency by doing mixed work of simple and artistic designs.

Marketing.—Some of the smaller printers do most of the printing for the big cloth merchants of Lucknow who act as *arhatias* and export things to Bengal and Behar. The Chikan dealers also get things manufactured by these firms and send them to the exporters in Calcutta and Bombay along with Chikan work. The firm of Kallan Khan Rasul Bux does extensive business and uses its own capital and material. They do wholesale trade with both local and out-station merchants. They send goods to England through the Emporium of the Arts School.

Suggestions.—Lucknow printed cloth can replace fancy coloured dress pieces and curtains which are to be seen in European shops. The work needs to be better organized and advertised. Steaming of prints should be adopted.

2. Better designs to suit modern taste ought to be introduced, and in this the Arts School should help the printers. "Small flowers studded over the entire field" is more in fashion in India, while open spacing would be more appreciated abroad.

3. There is need of a regular training school where all may learn the art in a more scientific way and begin the work of printing chintz of all kinds. A school is likely to flourish even if fee is charged.

4. Lucknow yellow and green colours are fugitive and the dyeing of fast colours should be taught to the printers. The smaller *karkhanedars* here should be organized in a co-operative society so that they may be free to print their own cloth and sell it. This was discussed with the *karkhanedars* and they welcomed the idea.

(b) *Hosiery.*

The term hosiery is used generally for all kinds of knitted articles, but in Lucknow only socks and stockings and a few ties and mufflers are made on hand machines. The industry is of very recent growth and was started by Mr. P. L. Nanakshahi some twelve years ago. The war gave the industry a fresh impetus and many machines were introduced. But all of them are not working for want of proper organization. Silk stockings are commanding a better sale than cotton ones.

Materials.—Cotton yarn comes from Cawnpore, while silk from Japan and Italy. Spun silk, i. e., silk produced by spinning the silk waste, is very common and comes from Italy and Japan. It is stocked by merchants in Calcutta and Benares from whom the local manufacturers get their supply.

Organization.—There are workers who work on their own machines and there are workers who are engaged by small factory owners and paid wages by the piece-work system. To avoid loss due to negligent breakage of needles the employers have fixed a higher wage out of which the workers have to provide the needles broken by them. They usually purchase the needles from the employers.

Marketing and advertisement.—The question of marketing is a problem in the industry. Many machines are lying idle for want of sale of their output. There are about 250 machines in Lucknow and if all of them work regularly, 250 dozen coarse socks or 170 dozen pairs of fine socks can be produced, but in fact only 45 dozen pairs are daily produced. Those who have retail shops of their own can do better business like the firm of Ram Nath (Bablu). Local merchants are not willing to stock local goods as customers would go to the manufacturers under the belief that they would get things cheaper and better there. They stock imported articles and try to push on the sale of the same. The firms producing silk stockings do good business with the European shops who often stock much of the socks, etc., made in Lucknow.

Profits.

	Rs.	a.	p.
Price of yarn for one dozen socks ...	15	0	0
Labour ...	2	8	0
Interest of capital and wear and tear, etc. ...	3	8	0
Total ...	21	0	0

These he will sell for Rs. 25 to Rs. 28 per dozen wholesale.

N.B.—Production per man per day—1 dozen pairs of coarse socks, 6 to 9 pairs of medium and 5 to 7 pairs of fine.

Consumption of yarn for socks one dozen—

On a medium machine, $1\frac{1}{2}$ lb. of cotton, $1\frac{1}{2}$ lb. of mercerised and 1 lb. of spun silk.

On a fine machine, $\frac{3}{4}$ lb. of silk and 1 lb. of wool.

On a coarse machine, 2 lbs. of cotton.

For hose the quantity of yarn required is double the above.

For Ladies' stocking $1\frac{1}{2}$ lb. of silk instead of $\frac{3}{4}$ lb.

Season.—The work is rather full in summer when socks cease to be a necessity with many.

Substitution for the imported articles.—The silk socks are competing with foreign ones, and with better organization they will replace them easily.

Suggestions.—A store for the supply of yarn is very necessary. The manufacturers can form a limited liability store on co-operative lines. The Government should finance the store which should supply only genuine manufacturers, and check speculation.

Better training of knitters is necessary and the weaving schools should give training in all kinds of improved methods of double sole making, etc. They should be taught the use of power machines and their appliance for the manufacture of underwears of all kinds.

To increase the scale of production and to avail themselves of the facilities of power machines and their appliances small manufacturers should form themselves into a co-operative society and rent the rooms on the LaTouche Road and in the Jopling Mart which are all in one row, and they can fit in power machines which will be worked by electric motor fixed at one place, all rooms to be connected with the motor by means of a shafting. This scheme should be tried by the knitters. There is scope for this industry as is evident from the following figures showing the import of hosiery into India :—

	Ra.
In 1913-14 to the value of ...	... 1,19,76,000
„ 1916-17 ditto ...	... 1,41,34,000
„ 1917-18 ditto ...	... 1,02,52,000
„ 1919-20 ditto ...	... 1,45,05,000

(c) *Weaving.*

In Nawabi days Lucknow produced very fine muslin for Chikan work, but the import of cheap cloth from abroad has killed the industry and now the fabrics woven are :—

- (1) Garha,
- (2) Doria and Tapti, i.e., coarse check for women,
- (3) Nakli or imitation Sangi, so-called because it is an imitation in cotton of the silk Sangi cloth of Azamgarh, and
- (4) Phulwar—flowered check.

The *swadeshi* movement has given some impetus to the hand-weaving industry, and coloured cloth for shirts, etc., and "Dhoop Chhan" for coats, etc., are also woven with mill dyed yarn. Weavers use the ordinary *kargha*. For Sangi and "pulwar" (flowered check) they have four to eight needles, while the rest have only two.

Yarn.—They use mill made yarn from Ahmedabad and Agra mills, and the counts most in use are 20 × 16½s. For Sangi they use 34 × 40s (imported yarn). Yarn is sold by local dealers in Malihabad and Kakori, while the weavers of Amethi have to go to Bara Banki. They have to pay a rate higher than the prevailing mill rate by 4 annas to 12 annas a bundle. Regular customers get on 8 days' credit.

Organisation.—The family is the unit. Women and children are all engaged in work, women wind yarn on the bobbin and children lay out the warp. Usually children are hired to lay out the warp and paid one anna per piece. The dressing and sizing (*pat*) is done by one weaver for another in a friendly way.

Marketing and advertisement.—The Sangi weavers of Kakori are under the grip of the head weaver who advances them money and takes the product. But the other weavers have to dispose off their goods as best as they can and have either to sell to some middleman who sells to cloth dealers or have to go out hawking in the neighbouring bazars and come as far as the city itself.

Profits.—Much of the profits of the weaver is nullified by the waste of his time in going to market for yarn and in disposing off his goods.

	Ra.	a.	p.
Price of yarn for 10 yards Garha	..	3	10 0
Cost of sizing with flour	...	0.	1 0
Wages for warping	...	0	1 0
Total	...	3	12 0

This will be ready in one and half days and will fetch Rs. 4-8-0 to Rs. 5. The saving of 12 annas to Rs. 1-4-0 goes to him as his own wages and those of his wife and children.

N.B.—Quantity of yarn for 10 yards of Garha and Saagi is 2½ lbs. Quantity for 9 yards Saagi is 2½ lbs.

A weaver can produce Garha 5 yards on the average, Tapti 4½ yards and Sangi 3 yards in a day.

Loss of time of the weaver.—A weaver has to lose time in dressing the warp, purchasing yarn from markets and in disposing off his goods. He loses at least 100 days in the year on these, in which time he could produce 66 pieces of Garha cloth and sell them for Rs. 330, getting Rs. 145 as his profit. Much of this waste can be saved if there is central organization owning a warping machine, bobbin winding machine and a store for yarn.

Suggestions.—Co-operative societies of weavers are doing well in Sandila and Tanda and efforts should be made to start them at Kakori, Malihabad and Amethi. The societies can get fly-shuttle looms, warping and other machines. The machines and appliances can be purchased jointly and used jointly for laying the warp, winding the bobbin, etc. There should be a store for the supply of yarn. This can either be a limited liability or unlimited liability concern; perhaps the former will be more successful. The Government can help this store financially as well as by expert advice. Local yarn is not used as it is more expensive than the Ahmedabad yarn, and only a few of the counts used are spun locally. The store can remove another great need—the sale of the finished products. The weavers can be put in touch with the city cloth merchants. They will collect their goods in the store and send them off through one of them to the cloth merchants. The prices will be fixed from beforehand. There is enough unity among the weavers and they can arrange among themselves to look to the sale by turns as they do for sizing, etc. If the weavers can be put in touch with the city they can be made to produce not only Garha, but good suiting cloths like that produced at Cannanore.

CHAPTER IV.

STATISTICS.

1.—Art industries.

(a) Chikan Embroidery.

Year.—1922.

Material.—Line and silk.

Number of men engaged.—1,685.

Outturn.—Value Rs. 5,00,000.

Exports.—Value Rs. 3,00,000.

Where exported.—To all parts of India and even Europe and America.

Wages.—Two annas to Rs. 30 per piece.

Price.—Four annas to Rs. 200 per piece.

Wages and prices are fixed for each article according to workmanship.

(b) Gota or gold and silver lace.

Year.—1922.

Material.—Badla silk and fibre.

Quantity used.—120,000 tolas badla, 700,000 tolas silk and fibre.

Value and rate.—Rupees 1,30,000.

Imports.—Locally made.

Number of men engaged.—250 in 50 karkhanas.

Outturn.—*350,000 tolas.

Exports.—200,000 tolas.

Where exported.—To all parts of India.

Wages.—Weavers one anna to 1 anna 6 pies per tola. Gokhru maker 2 annas to 4 annas per 100 tolas. Other makers Rs. 1-4-0 per 100 tolas. Karkhanedar 3 pies per tola.

Price.—Rupahli 10 annas to Rs. 1 per tola. Sunahli 12 annas to Rs. 1-3-0 per tola.

* 154 tolas per man per month working for 350 days.

Average production per man.—Six tolas per day, earning about Rs. 12 per month.

(c) *Gold and silver manufacturers.*

Year.—1922.

Material.—Gold and silver.

Quantity used.—Gold worth Rs. 80,000 and silver Rs. 4,50,000.

Value and rate.—Rupees 28 per tola gold and Re. 1 per tola silver.

Imports.—Value Rs. *10,00,000 gold and Rs. 25,00,000 silver.

Whence imported.—England via Bombay and Cawnpore.

Number of men engaged.—400.

Outturn.—Gold worth Rs. 1,00,000 and silver Rs. 5,00,000.

Exports, including metals.—Gold Rs. 6,00,000 and silver Rs. 16,00,000.

Where exported.—To all districts of Oudh.

Wages.—Gold Re. 1 to Rs. 5 per tola, silver 3 annas to 6 annas per tola.

Price.—Value of metal plus wages.

(d) *Silver wire drawing or Kandla Kashi and Tarkashi.**

Year.—1922.

Material.—Silver bars and bars coated with gold

Quantity used.—* 600,000 tolas of silver and 1,600 tolas of gold.

Value and rate.—Rupee 1 per tola silver and Rs. 28 per tola gold.

Imports.—600,000 tolas silver and 1,600 tolas gold.

Whence imported.—England via Bombay and Cawnpore.

Number of men engaged.—Kandla 50, Tarkashi 180.

Outturn.—About 600,000 tolas.

Wages.—Rupees 1-4-0 per silver kandla, Rs. 2, Rs. 5 to Rs. 8 per golden kandla of 60 tolas with 10 tolas gold.

Price.—Not sold as wire.

Average production per man.—40 tolas a day silver and 15 tolas a day gold.

Remarks.—All this is made into badla, salma and sitara.

* Figures obtained from Khunkhujee, the premier merchant.

(e) Badla, salma and sitara making.

Year.—1922.

Material.—Silver wire.

Quantity used.—About 500,000 tolas.

Imports.—Locally drawn.

—Number of men engaged.—(1) Badla 250.

(2) Salma sitara 250.

Outturn.—500,000 tolas.

Wages.—(1) Badla 9 pies to one anna per tola.

(2) Salma 1 anna 6 pies to 2 annas 6 pies per tola.

*Price.—(1) Sunahri Rs. 1-4-0 per tola, Rupahli Rs. 1-2-0 per tola.

(2) Rupees 1-10-0, Rs. 1-14-0 and Rs. 2.

Average production per man.—(1) Badla 7 tolas a day.

(2) Six to 8 tolas a day.

(f) Zardozi and Kamdani.

Year.—1922.

Material.—Zardozi, salma and sitara, kamdani, badla.

Quantity used.—40 to 25 tolas for zardozi, salma and sitara, and 23,500 tolas for kamdani, badla.

Value and rate.—Rupees 1-10-0 to Rs. 2 for zardozi, salma and sitara and Rs. 29,375 for kamdani, badla.

Imports.—Locally made.

Number of men engaged.—325 in 90 *karkhanas* for zardozi, salma and sitara and 250 men in 50 *karkhanas* for kamdani, badla.

Outturn.—†40,625 tolas for zardozi, salma and sitara and ‡23,500 tolas for kamdani, badla.

Where exported.—To Behar and Bengal.

Wages.—Rupee 1 per tola for zardozi, salma and sitara and Rs. 1 per tola for kamdani, badla.

Price.—Weight of material plus wages.

Average production per man.—Eight *mashas* a day for zardozi, salma and sitara and 6 *mashas* a day for kamdani, badla.

* For salma the price varies according as 6 *mashas*, 10 *mashas* and † tola gold is used for coating 60 tolas handle.

† 8 *mashas* a day, 325 men working for 250 days.

‡ 6 *mashas* a day, 250 men working for 250 days.

*(g) Panni or lead leaf making.**Year.*—1922.*Material.*—Lead.*Quantity used.*—940 maunds.*Value and rate.*—Rupees 39,246 at Rs. 132 per maund.*Imports.*—940 maunds.*Whence imported*—Cawnpore.*Number of men engaged.*—Seventy-five in all, 45 leaf makers.*Outturn.*—*940 maunds.*Exports.*—920 maunds.*Where exported.*—Bareilly, Lahore, Peshawar, Sialkot.*Wages.*—Dual Rs. 1-2-0 for 3½ seers, leaf Re. 1-2-0 for 3½ seers.*Price.*—Rupees 4-8-0 per seer. Coloured Rs. 3-7-8 per seer.*Average production per man.*—Three seers a day.*(h) Silver leaf making.**Year.*—1922.*Material.*—Silver.*Quantity used.*—6,750 tolas.*Value and rate.*—Rupees 6,750 at Re. 1 per tola.*Imports.*—6,750 tolas.*Whence imported.*—Bombay and Cawnpore.*Number of men engaged.*—30 in 10 *karkhanas*.*Outturn.*—†4,500 gaddis of 150 leaves.*Wages.*—Rupees 1-8-0 to Rs. 2 per gaddi.*Price.*—Six pice to one anna per leaf.*Average production per man.*—One gaddi in 2 days.

2.—Building materials.

*(a) Brick kilns.**Year.*—1922.*Material.*—Brick earth.*Value and rate.*—Rupees 150 to Rs. 250 per bigha.

* 45 men preparing 3 seers a day for 280 days.

† A man producing 1 gaddi of 1½ tolas in 2 days, working for 300 days.

Number of men engaged.—*500 men in 40 bhattas.

Outturn.—45,000,000 bricks.

Wages.—Six annas to 8 annas per labourer, Rs. 1-4-0 to Rs. 1-8-0 per moulder.

Price—

	Rs.
I class	... 22 per 1,000
II „	... 20 „ „
III „	... 18 „ „

Average production per kiln.—About 8 to 9 lacs per annum.

(b) *Lime mills.*

Year.—1922.

Material.—Kankar.

Quantity used.—1,605,000 cubic feet.

Value and rate.—Rupees 6-8-0 to Rs. 8-8-0 per 100 cubic feet.

Imports.—Locally excavated.

Number of men engaged.—400 in all the 23 mills.

Outturn.—1,605,000 cubic feet.

Exports.—200,000 cubic feet.

Where exported.—To neighbouring districts.

Wages.—Six annas to 8 annas per day. Mistri Rs. 20 per mensem.

Price.—Rupees 23 to Rs. 25 per 100 cubic feet.

Average production per mill.—75,000 to 100,000 cubic feet.

3.—Food grains.

Flour Mills.

(1) *Muhammad Ali's Flour Mills, Latouche Road.*

Year.—1922.

Machinery.—Oil-engine 18 H. P.

Two flat mills.

Number of men employed.—Three.

Wages.—Rupees 12 to Rs. 25 per mensem.

* Labourers are cheating every day.

Raw material used locally.—Wheat, quantity not fixed. They work for dealers and customers.

(2) *Babu Bishambhar Nath's Flour Mill, Daliganj.*

Machinery.—Oil-engine 18 H. P.

Two mills.

Outturn.—Five to 6 maunds per hour, working for 6 to 8 hours.

(3) *Mohammad Ali's Flour Mill, Latouche Road, near National Bank of Upper India.*

Machinery.—Oil-engine 18 H. P.

One vertical engine producing 6 to 8 maunds per hour.

(4) *Vaish Flour Mill, Grain market, Ganeshganj.*

Vertical mill.—One.

Electric motor 10. H. P. consuming $1\frac{1}{2}$ units per maund.

Cost of one unit.—Three annas.

Yield.—Five maunds per hour.

(5) *Agarwal Flour Mills, Hewett Road.*

This mill works by electric motor. This motor is used for sawmill also owned by the proprietor.

(6) *Syed Mohammad Ali's Flour Mills, Latouche Road.*

Machinery.—Oil-engine 18 H. P.

Two mills, but only one works and the other remains idle and is used when this one is under repairs.

Yield.—Five maunds per hour. Works 4 to 5 hours.

4.—Haberdashery.

Manufacture of horn combs.

Year.—1922.

Material.—Buffalo horn.

Quantity used.—500 maunds.

Value and rate.—Rupees 7 to Rs. 9 per maund.

Number of men engaged.—60.

Outturn.—100,000 combs.

Exports.—300 maunds of combs.

Where exported.—To the mufassil towns and villages.

Wages—Income about Rs. 20 per month.

Price.—One anna six pies to 5 annas each.

Average production per man.—200 combs per month, working for 10 months.

5 — Hardware.

(a) Metal utensils.

Year.—1922.

Material.—Copper and kaskut.

Quantity used annually.—1,200 maunds copper and 1,400 maunds kaskut.

Value and rate.—Rupees 84,000 at Rs. 70 per maund copper, and Rs. 35,000 at Rs. 25 a maund kaskut.

Imports.—1,200 maunds old utensils.

Whence imported.—Europe via Bombay and Cawnpore.

Number of men engaged.—60 on copper and 80 on kaskut.

Outturn.—*900 maunds copper and 1,300 maunds kaskut.

Wages per maund.—Rupees 12 bigger vessels, Rs. 15 to Rs. 20 smaller.

Price.—Rupees 2-4-0 to Rs. 2-8-0 per seer copper and Rs. 1-5-0 per seer kaskut.

Average production per man.—1½ maunds per mensem copper and 2 maunds per mensem kaskut.

(b) Iron works.

Year.—1922.

Material.—Sheet iron, old iron, etc., and wrought iron.

Quantity used.—2,630 maunds sheet iron and 6 to 7 tons old iron, etc., and wrought iron.

Value and rate.—Rupees 42,080 at Rs. 16 a maund copper, Rs. 3 to Rs. 4 a maund old iron, etc., and Rs. 18 per maund wrought iron.

Imports.—2,630 maunds.

Whence imported.—Sheet iron from England via Cawnpore and old iron, etc., and wrought iron locally gathered from Cawnpore.

* 96 maunds per month for 10 months, 174 maunds per month for 7½ months, as they have to waste time in mould making.

Number of men engaged.—*65 in the district and 40 in city on copper and †45 on old iron, etc., and wrought iron.

Outturn.—*2,630 maunds copper and †6 to 7 tons old iron, etc., and wrought iron.

Wages.—*Income Rs. 20 per month for copper. Wages Rs. 30 to Rs. 50 per mensem.

Price.—*Twelve annas per seer of sheet iron utensils. †Not fixed on old iron, etc., and wrought iron.

Average production per man.—*25 maunds per man.

6.—Leather.

(a) Tanning.

(i) General.

Year.—1922.

Material.—Hides and skins.

Quantity used.—24,000 hides and 30,000 skins.

Value and rate.—Hides Rs. 7 to Rs. 12 each and skins 8 annas to 10 annas each.

Number of persons employed.—†905 in about 120 *karkhanas*.

Outturn.—24,000 hides and 30,000 skins.

Wages.—§Income about Rs. 125 per *karkhana* per month.

Price.—Hides Rs. 15 to Rs. 20 and skins Rs. 13 to Rs. 17.

Average production per man.—Twenty hides per month for *karkhana*.

(ii) Lucknow chrome tannery.

This is a new venture by three graduates of the Allahabad University to carry on chrome tanning as a cottage industry. They have succeeded in manufacturing good chrome leather and sole by the help of Chamars under their guidance. They are now in need of capital to get some appliances to increase the scale of their production. The partners are Mr. N. V. Joshi, M. SC., Mr. V. N. Vidyant, M. SC., and Mr. H. N. Sen, B. SC.

* For iron utensils.

† For moulders and forgers in the two workshops—Mr. Shiam Sunder Lal's and Mr. R. N. Saanyal's.

‡ The figures are for the whole district. In Lucknow proper there are 240 men producing 16,800 hides and 20,000 skins.

§ They are cottage workers.

(b) Leather working.

Year.—1922.

Material.—Upper leather, sole, lining leather, lining canvas and heel pieces.

Quantity used.—470,000 s. ft. upper leather, 299,000 s. ft. sole, 203,000, 203,000, lining leather, 203,000 s. ft. lining canvas, and 1,260 maunds heel pieces.

Value and rate.—*Chrome 10 annas to Re. 1-2-0 per s. ft., black Rs. 7-8-0 to Rs. 10 per piece, sole Rs. 15 to Rs. 25 per piece, lining leather Re. 1 per skin, lining canvas 3 annas per s. ft. and heel pieces Rs. 2 per seer.

Imports.—Upper leather, 1,345,000 sq. ft., sole local, lining leather local, lining canvas 203,000 s. ft., and heel pieces 1,260 maunds.

Whence imported.—Upper leather from Calcutta and Cawnpore, lining canvas and heel pieces from Cawnpore.

Number of persons employed.—225 for Chrome shoes, 300 for black and 150 for others.

Outturn (annual).—67,500 pairs upper leather, 131,600 pairs sole and 76,250 pairs lining leather.

Exports.—10,000 pairs annually.

Where exported.—To all parts of India and even to Mesopotamia and Egypt.

Wages.—Leather 12 annas to Rs. 1-4-0 a pair, canvas 8 annas to 12 annas, cheap 4 annas to 6 annas per pair, cutter, 2 annas 6 pies, sewing upper 1 anna 3 pies per pair.

Prices.—Chrome Rs. 6-8-0 to Rs. 14, black Rs. 4 to Rs. 6, desi 14 annas to Rs. 2-8-9 per pair.

Average production per man.—Chrome one pair daily, black one pair, cheap 2 to 3 pairs daily.

7.—Miscellaneous.

(a) The Lucknow Brewery.

The Lucknow Brewery.—Daliganj owned by Dyer, Meakin & Co., Ltd.

Year.—1922.

* Calculated on the presumption that all are leather goods.

† Outturn is Chrome 225 pairs a day for 300 days, black tanned 470 pairs a day for 300 days, desi 305 pairs a day for 350 days.

Machinery.—Engine 8 × 6, boiler 65, 26 and 9 N. H. P.

Number of men employed.—77.

Wages.—Rupees 12-8-0 per month.

Raw material imported.—Mahua and shira.

Annual outturn.—Mahua 69,111·3 gallons at Rs. 1-8-0 per gallon, shira 65,746·5 gallons at Rs. 2-1-0 per gallon.

(b) *Ice Factories.*

(i) *Victor Ice Mills, owned by M. Amir Husain, Aishbagh.*

Year.—1922.

Machinery.—Engine and boiler 35 H. P.

Ammonia machine.

Number of persons employed.—20.

Wages.—Rupees 25 to Rs. 50 per month.

Raw material imported.—Ammonia.

Raw material used.—Local. Water.

Annual outturn.—40,000 maunds.

(ii) *Ramchandra Ice Factory, Aishbagh, owned by L. Ramchandra.*

Will begin work this season.

(iii) *Bhargava Ice Factory, owned by partners, Huzratganj.*

Will begin work this season.

(iv) *Dilkusha Ice Factory, Bandariyabagh*

Year.—1920.

Machinery.—Engine and boiler 25 H. P.

Ammonia machine.

Number of men employed.—24.

Wages.—Rupees 12 to Rs. 30 per month.

Raw material imported.—Ammonia.

Raw material used.—Local. Water.

Annual outturn.—16,020 maunds.

(c) *Paper Mills.*

The Upper India Couper Paper Mills Co., Ltd., owned by shareholders, Badshahnagar, Lucknow.

Year.—1922.

Machinery.—(1) 2 engines, 5 boilers, 1,500 H. P.

(2) 2 sets of paper-making machines.

(3) Pulp-making machines.

Number of men employed.—740.

Wages.—Eight annas to Re. 1-8-0 per day.

Raw material imported.—(1) Grass, old jute and rags.

(2) Chemicals, caustic soda, alum, bleach, resin.

(3) Katni brown clay and lime.

Raw material used (local).—Rags, etc., turmeric.

Annual outturn.—35,000 tons.

(d) *Printing Presses.*

1.—Newal Kishore Press, Hasratganj, the oldest Press, (owned by Munshi Bishan Narain Bhargava).

Year.—1921.

Number of machines.—20.

Number of double feeders.—2.

Number of men.—447 men, 50 boys.

Oil engine.—2½ H. P.

Outturn.—Worth Rs. 2,39,466-5-6. Do Lithography, Die Stamping, Letter Press Printing, Block Printing, Colour Printing in Lithography, Block making and Block printing in three colours, also Type casting.

Wages.—Rupees 12 to Rs. 30 per month.

Raw material imported.—Paper and ink.

Raw material used (local).—Paper.

2.—The Methodist Publishing House, Hasratganj (owned by M. E. Mission of America).

Year.—1921.

Machines.—8.

Self-feeding treadle.—1.

Linotype machine.—1.

H. P. of engine and boiler.—11 H. P.

Output.—Worth Rs. 1,02,284.

Working capital.—About Rs. 1,00,000.

Profits.—Rupees 4,362.

Number of men employed.—75.

Wages.—Rupees 12 to Rs. 20 per month.

Raw material imported.—Paper, ink, types.

Raw material used (local).—Paper.

3.—*Steam Printing Press, Narahi.*

Year.—1921.

Number of machines.—3.

Number of double feeders.—1.

Treadle.—2.

Hand Press.—3.

Number of men.—62.

Wages.—Rupees 18 to Rs. 30 per mensem.

H. P. of engine.—12½ oil engine.

Raw material imported.—Paper, ink.

4.—*Anglo-Oriental Press.*

This I shall describe as a typical press worked by handpower.

Number of machine.—1.

Number of treadles.—2.

Number of hand presses.—2.

Number of men.—15.

(e) *Tobacco.*

(i) *Eating or chewing tobacco.*

Year.—1922.

Material.—Leaf and kivam.

Quantity.—4,000 maunds leaf and 750 maunds kivam.

Value and rate.—Same as in smoking tobacco.

Imports.—*6,000 maunds.

*Only leaf proper is used and out of 6,000 maunds imported, 2,000 are for kivam and smoking tobacco.

Whence imported.—Sitapur, Bahraich, Bengal, Behar.

Number of men engaged.—120 men in 15 shops.

Outturn.—6,000 maunds of *zurda*, *goli* and *kivam*.

Exports.—3,500 maunds.

Where exported.—To all parts of India, especially Bengal and Behar.

Wages.—Rupees 20 to Rs. 40 per month, 6 annas to 8 annas a day.

Price.—From Rs. 2 per seer to Rs. 32 per seer.

(ii) *Smoking tobacco.*

Year.—1922.

Material.—Leaf, shira and khamira.

Quantity used.—12,000 maunds leaf, 12,000 maunds shira and 5,000 maunds khamira.

Value and rate per maund.—Rupees 15 to Rs. 18 local and Behar, Rs. 20 Bahraich, Rs. 28 Sitapur leaf, Rs. 4-8-0 per maund shira and 4 annas per seer khamira.

Imports.—8,000 maunds leaf, and 20,000 maunds shira.

Whence imported.—Leaf from Bahraich, Sitapur, Behar and Bengal, shira from Sugar Mills of Unao and Shahjahanpur, and khamira local.

Number of men engaged.—350 men in 180 shops.

Outturn.—35,000 maunds annually.

Wages.—Rupees 20 to Rs. 30 per month, 6 annas to 8 annas a day.

Price.—From 2 annas 6 pies to Rs. 1 per seer.

8.—OIL

(i) *Oil pressing.*

Year.—1922.

Raw material.—Oil seeds, e.g. mustard and rape.

Quantity used.—11,400 maunds.

Imports.—64,490 maunds (municipal figures).

Whence imported.—From the neighbouring districts.

Number of men engaged.—450 or 260 *kolhua*.

Outturn.—3,800 maunds annually (19 maunds per day working for 200 days, the city *tatis* only).

Wages.—Six annas if labourer employed. Income Rs. 15 per mensem.

Average production per kolhu.—Nine to 12 seers a day.

(ii) *Perfumery.*

Year.—1922.

Materials.—Flowers, sandal oil, spices for Heena, Til.

Value and rates.—(Bela Rs. 30 a maund, Chameli Rs. 30 a maund.

Flowers.—Maoulsari Rs. 10 a maund.

Sandal.—Rs. 44 per maund.

Imports.—6,000 maunds.

Whence imported.—Nepal and Bombay.

Number of persons employed.—45.

Outturn.—Worth Rs. 40,000.

Wages.—Eight annas to Re. 1 per day or Rs. 30 per month.

Price.—Soents Rs. 2 to Rs. 10 per tola (prices vary much from Re. 1 to Rs. 100 per tola, usually Rs. 2 to Rs. 10) Oil Rs. 2 to Rs. 8 per seer.

9.—Other industries connected with edibles.

(a) *Diamond Dairy, Lucknow.*

Year.—1922.

Number of cattle.—300 cows and buffaloes.

Number of men.—40 unskilled, 10 skilled.

Daily outturn.—Milk 10 maunds, cream 10 lbs., butter 70 lbs., cheese 5 lbs. Total milk from cattle 17 maunds. Total required 21½ maunds.

Wages.—Unskilled Rs. 15 per mensem. European Manager Rs. 150. Others Rs. 25 to Rs. 50 per mensem.

Price per lb.—Milk 2 annas, cream Re. 1-4-0, butter Re. 1-6-0, ghee Re. 1-8-0, cheese Re. 1-8-0.

(b) *The King Dairy Farm.*

Year.—1922.

Number of cattle.—40.

Number of men.—Skilled 2, unskilled 10.

Outturn daily.—Milk 6 maunds, cream 2 lbs., butter 20 lbs.

Wages.—Rupees 15 per mensem for unskilled, Rs. 20 to Rs. 30 for skilled.

Price.—Same as Diamond Dairy.

10.—Textiles.

(a) Calico printing.

Year.—1922.

Name of material.—Cotton cloth and satin.

Quantity used.—5,000 yards cotton cloth, 2,000 yards satin.

Imports in weight or value.—5,000 yards cotton cloth, 2,000 yards satin.

Whence imported.—Cotton cloth from Bombay and Cawnpore, and satin from Azamgarh.

Number of men engaged.—200 in 6 *karkhanas*.

Output in weight or value.—12,000 piece pakka, 500 piece kachcha.

Quantity exported.—7,000 pieces.

Where exported.—To all parts of India and to Europe and America.

Wages.—Cotton cloth at one anna to three annas per piece and satin at 12 annas to Re. 1-4-0 per day.

Price.—Cotton cloth Rs. 7 to Rs. 10 each and satin Rs. 20 to Rs. 30.

Average production per man.—Six to 20 pieces a day.

(b) Hosiery.

Year.—1922.

Material.—Yarn.

Cotton 20s and 16s.

Mercerised 42s, 64s, and 84s.

Silk 140/2, 160/2.

Wool.

Quantity used.—Cotton 9,000 lbs.

Mercerised 3,750 lbs.

Silk 1,563 lbs.

Wool 667 lbs.

* Wages according to intricacy of design.

Value and rate per lb. or per bundle.—

Cotton Mercerised, Silk, Re. 1-4-0 and Re. 1-3-0 per lb.

Cotton Mercerised Silk, Rs. 30, Rs. 40 and Rs 55.

Cotton Mercerised Silk, Rs. 15 and Rs. 16 per lb.

*Imports.—*Cotton 9,000 lbs.

 Mercerised 3,750 lbs.

 Silk 1,563 lbs.

 Wool 667 lbs.

*Whence imported.—*Cotton from Cawnpore.

 Mercerised from Cawnpore and Bombay.

 Silk from Italy and Japan via Calcutta.

 Wool from Cawnpore.

*Number of men employed,—*100 on 100 machine. (All machines do not work regularly.)

*Outturn daily.—*45 dozen pairs.

*Exports.—*30,000 pairs annually.

*Where exported.—*To all parts of the United Provinces.

*Wages per dozen pairs.—*Rupees 2-8-0 fine, Re. 1-12-0, medium and Re. 1 coarse.

*Price per dozen.—*Cotton Rs. 7 to Rs. 12.

 Mercerised Rs. 11 to Rs. 20.

 Silk Rs. 30 to Rs. 45.

 Wool Rs. 2-4-0 and Rs. 2-8-0 a pair.

Average production per man (daily).—

 Coarse 1 dozen pairs.

 Medium 6 to 9 pairs.

 Fine 5 pairs.

(c) *Weaving.*

*Year.—*1922.

*Material.—*Yarn counts 20s \times 16½s and 40s \times 34s.

*Quantity used.—*208,000 lbs. and 8,334 lbs.

*Value and rate.—*Rupees 10-8-0 to Rs. 12 per bundle.

*Imports in quantity.—*208,000 lbs. and 8,334 lbs.

*Whence imported.—*Ahmedabad, Cawnpore, England via Bombay.

Number of persons employed.—1,000 on 590 ordinary looms.

N.B.—There are 590 looms and eight fly shuttle looms.

Outturn in quantity.—*Garha 840,000 yards, Tapti 18,000 yards.

Sangi 30,000 yards.

*340 looms 5 yards a day for 200 days.

200 " 4½ " " " " "

50 " 3 " " " " "

Wages.—Three annas per warp. Income 12 annas a day.

Price.—Garha Rs. 4-8-0 to Rs. 6, Tapti Rs. 5-8-0 to Rs. 6,

Sangi Rs. 7 to Rs. 8-8-0.

Average production per man.—Five yards a day, 4½ yards a day and 3 yards a day, respectively.

(d) *Ramchand Gursahai Mall Cotton Mills Co., Ltd.,*
Talkatora, Lucknow. Owned by shareholders.
Managing Director Mr. S. N. Khanna.

Year.—1922.

Machinery.—Engine and boiler 300 I. H. P.

Spindles 8,256.

Number of men employed.—425.

Wages.—Four annas to Re. 1 per day.

Raw materials imported.—Cotton 824,166 lbs.

Annual outturn.—695,410 lbs. up to 34s counts.

CHAPTER V.

MISCELLANEOUS.

*(a) Railway Freights.**Lucknow to Bombay—*

			Rs. a. p.	
1. Oilseeds	...	...	0 12 10	per maund.
2. Oil	...	...	1 10 11	" "
3. Wheat	...	...	0 12 10	" "
4. Wheat flour	...	...	0 13 5	" "
5. Rice	...	...	0 12 10	" "

Bombay to Lucknow—

			Rs. a. p.	
1. Glass	...	...	3 15 0	per maund.
2. Cotton fabrics	...	...	2 5 1	" "
3. Hosiery	...	...	2 5 1	" "
4. Tinned fruits	...	...	2 7 3	" "
5. Tobacco	...	...	3 3 1	" "
6. Chemicals	...	...	3 15 1	" "

Lucknow to Allahabad—

			Rs. a. p.	
1. Oilseeds	...	...	0 4 8	per maund.
2. Oil	...	...	0 4 11	" "
3. Wheat and flour	...	...	0 4 8	" "
4. Rice and rice in husk	...	...	0 4 8	" "
5. Hides and skins	...	...	0 7 0	" "
6. Babul bark	...	...	0 4 11	" "
7. Boots and shoes	...	...	0 4 8	" "

Lucknow to Ouzmpore—

		Rs.	a.	p.	
1. Oilseeds	...	0	1	8	per maund.
2. Oils	...	0	2	4	" "
3. Wheat and flour	...	0	2	2	" "
4. Rice and rice in the husk	...	0	2	2	" "
5. Hides and skins	...	0	3	1	" "
6. Babul bark	...	0	2	4	" "
7. Boots and shoes	...	0	3	1	" "
8. Glass	...	0	4	8	" "
9. Cotton fabrics	...	0	3	10	" "
10. Chemicals	...	0	4	8	" "
11. Tobacco	...	0	3	10	" "

Calcutta to Lucknow—

		Rs.	a.	p.	
1. Glass	...	3	6	7	per maund.
2. Cotton fabrics	...	2	11	9	" "
3. Tinned fruits	...	2	1	0	" "
4. Tobacco	...	2	11	7	" "
5. Chemicals	...	3	6	7	" "

Naini to Lucknow—

		Rs.	a.	p.	
1. Glass	...	0	13	2	per maund.

Bajohi to Lucknow—

		Rs.	a.	p.	
1. Glass	...	1	1	10	per maund.
2. Cotton fabrics	...	0	9	2	" "
3. Tinned fruits	...	0	7	0	" "
4. Tobacco	...	0	9	2	" "
5. Chemicals	...	0	11	4	" "

(b) *Average and outturn of the important crops, year 1920-21.*

Name of crop.	...	...	Acreage.	Outturn in maunds.
Wheat	...	...	78,759	938,849
Barley	...	...	6,351	69,762
Gram	...	...	20,602	217,809
Peas	...	...	8,969	13,561
Poppy	...	...	3,614	16,218
Rice	...	...	49,260	540,183
Maize	...	...	18,427	261,308
Arhar	...	...	35,213	209,334
Cotton	...	...	7,876	2,170½ bales of 440 lbs. each.
Sugarcane	...	...	2,870	91,000 of <i>gur</i> .
Linseed	...	...	68	288
Rape-mustard	...	...	46	269
Til	...	...	124	454
Ground-nut	...	...	759	6,831
Juar	...	...	23,259	194,013
Bajra	...	...	38,737	269,515
Tobacco	...	...	266	1,862
Sanai	...	...	839	6,139
Sannhemp	...	...	46	336½

(c) *Note on Lucknow Bidar work by NAT. HEARD, Esq., A.R.C.A., Controller, United Provinces Arts and Crafts Emporium, Lucknow.*

This industry was in a flourishing state about hundred years ago, but must unfortunately be considered a rapidly declining industry now.

As the name implies, the industry was founded at Bidur, a town in Hyderabad, and the craft is supposed to have been invented by a Hindu king named Bidar, who used it for the special decoration of vessels and other articles in connection with his daily worship.

At this time the work was very crude and is said to have been much improved by following generations of Hindus, but it has been mainly developed by Muhammadans.

The work consists of the inlaying of silver into zinc and other composite metals and also in small quantities into other metals such as steel, iron, copper and brass.

Three towns are specially noted for this work, viz., Bidur, Murshidabad and Lucknow, and although great variety in the work exists, the work of each district has distinctive qualities which makes the source of origin readily discernible to the connoisseur.

A very large percentage of the work consists of inlaying of silver on the supporting metal, the surface being perfectly smooth at the finish, the pattern therefore depending on the contrasting colours of the metals for its effect. Other metals are also used in this decorative art, wealthy persons requiring that the inlay shall be of gold, whilst the poorer class often contented themselves with an inlay of brass.

It may be broadly stated that the highest class of work contains the most gold or silver and also usually the most intricate and finely worked patterns, and thus there was considerable scope for the display of skill in design and craftsmanship.

A departure was made in Lucknow from this flat, smooth work in what was known as "Zarbalandi," or low relief work, which consisted of a raised and chased pattern being worked on to the silver or gold used. The introduction of "Zarbalandi" altered the character of the work, and, so far as I can gather, the descent of the industry dates from that introduction.

This work is of a flat type of relief of which the general height is perhaps 1/16th of an inch.

The introduction brought about two conditions which were destined to prove unfavourable to the craft:—

(a) That pieces of silver were used in irregular shapes taking the form of leaves, flowers, fish, etc., varying in size from a two-anna piece to one rupee, and (b) that the relief pattern was worked on the silver after it was inserted in the supporting metal causing small air spaces to exist beneath the metal which

in the course of a short time set up corrosion, the result being that the thin sheet of silver rapidly scaled off and so the value of any old piece of "Zarbalandi" to-day is usually much less than smooth Bidar of similar age.

Another point was that the fine intricacy of pattern disappeared and "Zarbalandi" is therefore merely a system of decoration in raised patches of silver, without much attempt at growth in the decorative motif used.

The best work of any kind is that which shows the greatest skill in engraving the space to be filled with the silver and in cutting exactly the silver piece to fill the space. Where therefore that skilful drawing is not within the power of the craftsman the work is inferior, and as in "Zarbalandi" great skill was not necessary in this part of the work, the craft as pure inlay rapidly declined.

I do not think "Zarbalandi" work has been done during the last ten years, and a return has been made to the purer style, with this modification that, whereas the old work was perfectly plain inlay, now it is engraved on the flat surface.

But the craftsmen having lost the power to draw, have never fully regained it and to-day the refinement of form seen in the old pieces is absent.

The objects made to-day are similar to those made fifty years ago and consist chiefly of *farshi*, *hukkas*, *surahis*, *pandans*, *abkhoras*, vases, *lottias*, tumblers, plates, trays, candlesticks, ink-stands, etc.

Forty years ago there were 25 workmen engaged in this trade about half of whom were Hindus, these being chiefly responsible for the preparation of the foundation of the work, whilst the Muhammadan craftsmen carried out the decorative side of it.

To-day only one *karigar* exists and his sight is failing and he employs, when necessary, a Hindu and a Muhammadan.

Forty years ago the average wage was Rs. 10 per month and the craftsmen was well-to-do on that pay. To-day the Muhammadan assistant can earn from Rs. 25 to Rs. 50 per month and

the Hindu about Rs. 40 when trade is sufficient to keep them in employment.

There are, in addition, four or five other men who can work at this trade, but they have had to seek employment elsewhere and are now working in the Oudh and Rohilkhand Railway Workshops.

The establishment of the Emporium has done something to keep this trade alive, as during the last one and a half years we have purchased Bidar work to the value of Rs. 2,441. We find that this work sells best in America, though there is a fair local trade and small English trade. From comments at the British Industries Fair I have gathered that it would find a sale in France if it could be shown there.

Assuming that all the workers now available in Lucknow could be fully engaged at present prices and rates of wages, there could be an outturn value of from Rs. 4,000 to Rs. 5,000 per year.

The following are the main reasons why the trade to-day is not prospering :—

- (a) Because to-day the craft is in one man's hands, and he is old, without enterprise, and his sight is failing.
- (b) Because the other workers cannot get regular employment and there is no incentive to increase their skill.
- (c) Because this is a craft that is more dependent on drawing than any other craft carried on in Lucknow, and it is a deplorable fact that these men who are engaged in it have never been taught to draw, and do not realize that the present state of the industry is due to the fact that their drawing is despised by the persons who should be their buyers and therefore supporters.
- (d) That the casting of the metal support is clumsy, heavy and irregular, and lacks all that refinement of form that should be an essential characteristic of such work.
- (e) That the industry is in the most conservative hands possible and there seems but little likelihood of extending the trade or increasing the number of craftsmen at present.

Time has been spent in explaining defects and what should be done to improve them, but the producer says that these defects have been common to this product ever since he was a boy, and cannot be altered. Such an outlook does not augur well for the future and the object of this note is to awaken outside interest in this once properly skilful and famous craft in the hope that some effort will be made to re-establish the industry.

Two things are essential to do this :—

- (1) That the craftsmen shall be able to draw and shall be able to recognise the difference between good and bad form and shape.
- (2) That new blood must be introduced into the trade.

Neither of these is easy of accomplishment owing to the conservatism of its present exponents.

But an effort should be made, and that quickly, if anything is to be done to rejuvenate this craft, and I put forward the following suggestions in the hope that Government will consider it sympathetically and afford the small necessary funds.

A few months ago I put forward the following suggestion :—
 "To bring this Bidar worker into the school for three years as an instructor and to start a class limited to five students, the recruitment for which should be limited to students who have either passed the third year's class in goldsmith's work or in silversmith's work and who would undertake to study Bidar work for a period of three years, and would be eligible to receive monthly stipends during this period up to Rs. 15 in the first year, Rs. 20 in the second year and Rs. 25 in the third year. The institution would also undertake to purchase for the ensuing five years work to their order to the value of at least Rs. 70 per month. Some such unusual means would have to be adopted to do anything to improve this craft."

Since making this suggestion I have approached him and I find him to be unwilling to teach anyone not belonging either to the families or to the trade, and as he has not youths available

belonging to his own family, I propose modifying my suggestion as follows:—

That if this proposal receives sanction, a meeting should be called of the eight or ten craft workers resident in Lucknow, whether now practising the craft or not, and invite them to send three of their sons to the school as half-timers, whilst they practise the craft with Hasan Ali for the other half of their time.

I suggest that they work with Hasan Ali to midday each day, and that afternoon be spent in learning to draw in this school.

The course would be for three years and the lads should be offered Rs. 10 maintenance stipend, and be paid in addition by Hasan Ali whatever they are worth according to bazar rates.

If this course was adopted there would be no objection to one goldsmith boy from the school working with them and he would receive a similar stipend and be paid by Hasan Ali in a similar way.

I propose that they should be taught the whole of the craft and according to the development of the various youths they should take up eventually the various parts of the trade and stick to them as a means of livelihood.

This is necessary owing to the system of division of labour obtaining in this craft as in many others. This division of labour is into moulders, engravers and inlayers.

The moulder prepares the clay mould and turns it up on the lathe in a similar way to the metal workers of Mirzapur, etc., and it is possible to get excellent casting by this process. The metal casting having been produced by the moulder, he next turns this up to obtain a fine surface, and when ready it is handed to the engraver (who is usually the designer), who traces upon it the desired patterns and engraves the whole to the depth desired according as to whether it is wire or sheet silver that is to be inlaid. When complete the article passes to the inlayer, who cuts the silver into the exact shape necessary for the inlay and these pieces of silver are inserted into the engraved spaces and the edges slightly burred over, the work completed by stoning the whole surface smooth and the supporting metal blackened.

It will be seen that the work of the designer is in this craft the most important section of the craft, as success is dependent on intelligence, skill as a draftsman and engraver, and must be the work of a person of taste, as the success or failure of the work is dependant on the form of the article and the pattern engraved on it.

The most intelligent boy would therefore be trained for this work and should receive a longer period of training as would be found necessary according to his aptitude for the work. With this he would receive a course of training in engraving.

As time went on, further developments would naturally take place, and I particularly wish to get back again to the inlaying of silver on copper, as the combination of the two metals has, in proper proportion, a charming effect. This would lighten the weight of the article, and articles could be produced from sheet metal for which I am sure I could find a ready sale.

I hope that sanction may be afforded to the trial of this scheme.

(d) *Note on Lucknow Ivory work by NAT. HEARD, ESQ., A.R.C.A., Controller of United Provinces Arts and Crafts Emporium, Lucknow.*

Ten years ago when I visited the craftsmen of Lucknow to acquire firsthand information with regard to the industries I saw in the Chowk two good craftsmen in ivory and was shown one or two good specimens of ivory work in process of execution. One, I remember, was a box not yet put together, but the sides and top were finished and the whole was of fairly deeply cut relief work, not perforated, and was of about Rs. 400 value.

I found, on making use of these men for the repair of certain valuable specimens in the Museum attached to the School of Arts and Crafts, that they were capable of the very finest carving and of fretting out almost inconceivably delicate tracery and the repair and new portions were carried out with great fidelity and care.

I can therefore fully confirm the view that the "Lucknow ivory carvers are better than they know themselves to be."

But the ivory carver does not seem to be able to produce good work regularly or ever to have any stock of good work to show.

A visit to the Chowk will disclose the fact that his shop consists of a small open shop 6' x 5' and that his whole equipment and stock will go into a space 2' x 1' and that the worker is anything but a prosperous man.

I believe one worker only exists to-day, who supplies to this Emporium ivory beads, necklaces, cigarette holders, paper knives, salt spoons, etc.

His stock, such as it is, is chiefly of bone and consists of *kalamdan* and *surmadanies*, combs, chessmen and other kinds of bone fretwork as well as poor reproductions of *hindolas*, chairs, dandies, etc.

I have on several occasions placed an order for any article of from Rs. 300 to Rs. 500 value provided they brought me a design for approval before starting to make, but so far I have not succeeded in getting either a design or any specimen of work shown me of over Rs. 50 value in the last five years.

The reasons for this is not far to seek. The trade is so small and the craftsmen are so poor that their existence is very much on a from day-to-day basis, and the craftsmen cannot take on a piece of work on which he has to wait six months for his pay, so he accepts orders for trifling articles, whilst his ability is such that he can produce magnificent work.

This condition is common to India, and is just the reason for the bania's existence, and such men needing advances have their services bought over. But the output of the ivory worker is so small that it is not worth the bania's attention and therefore he manages such business as he has for himself.

I find that the Lucknow craftsman has a local connection with the jewellers in Hazratganj, as well as with us, for all of whom he produces mostly goods to order, but his real connection is with Delhi where he supplies the dealers with small articles.

The valuable, artistic and skilful product is therefore squeezed out of existence and the problem is how to keep alive the industry and obtain work of a better class.

I put forward the following suggestion in the hope that it may be considered a possible solution.

There is in the school budget a fund available under the head Artisan stipends by which Rs. 25 per month are payable to craftsmen who are anxious to improve themselves.

But this sum is not sufficient to induce a man to close his connection with his present buyers and take up work under our conditions. He must be assured that he will at least get the equivalent of his present earnings, and it is in his interests that he should still keep in touch with his present buyers even if his outturn on their behalf is of less extent.

I propose to meet this difficulty. This man should be brought into the school as a half-time worker, say the three first days of the week, and that he be guaranteed not less than Rs. 40 per month for his services for that period.

The work that he would produce would be available for sale in the Emporium and would be purchased from the school, and the amount so paid would be paid into the treasury and would stand against the sum paid to him as his stipend.

I would endeavour to persuade two goldsmith students to work with him on enhanced scholarships so that they might learn the craft, and in this way taking boys in their-third year we should be doing something to perpetuate the craft.

The ideas he would work out he would model up in wax, after which they would be carved in ivory.

Work now turned out is almost entirely for the European purchaser; but if work in miniature of a similar character to that turned out by our very expert character figure modelling class could be executed in ivory (and I think it is quite possible) we should have in a single stride placed the standard of work in Lucknow ivory carving upon a plane infinitely superior to work being carried out at present.

Such examples would be cherished by Indians and Europeans alike, and by such simple means a charming and intrinsically valuable kind of work and craftsman would be produced and a result achieved which would give in a short time the ivory

carving of Lucknow a position of excellence among the ivory carvers of the East.

(e) *Note on Lucknow Silver work* by NAT. HEARD, ESQ., A.R.C.A.,
Controller of United Provinces Arts and Crafts Emporium,
Lucknow.

This is of two kinds : (a) that produced for the Indian market and (b) that produced to meet European requirements in India.

There are said to be fifty families of silver workers in Lucknow, mostly of the Sonar caste, of which 20 per cent. are working for the European trade.

For the Indian market the work mainly consists of personal ornaments, vessels for religious purposes, articles comprising the wedding equipment of a bride, all manner of articles of state and luxury, articles that may be required by the wealthier members of the Indian community and many such things as chairs, howdahs and shamiana supports are encased in worked silver.

In practically all work for Indian requirements though the surface is required to be richly worked in various ways, it is not considered necessary to pay for expert craftsmanship and therefore there is no incentive on the part of the craftsmen to produce work of a high standard.

The usual method employed is for the person requiring the article to be made to provide the silver and to direct as fully as possible the operation during its progress and in some cases to have the work done at their own houses under their immediate and constant supervision.

The aim is, if say a hundred tolas of silver have been provided, to obtain an article weighing at the finish a similar weight and to provide the craftsman with a totally inadequate sum for his labour.

The result is that the craftsman has to make what he can during the process of manufacture, and in this he has two not easily recognizable means at his disposal, viz., in alloying the metal and in soldering.

He may therefore add from 5 to 20 per cent. of inferior metal in alloying and by the very liberal use of cheap silver solder

increase the weight of an article at considerably less cost than the original price of the silver.

The silver workers are therefore not working under conditions that are conducive to improvement in craftsmanship, and this is markedly so in these times when the various commodities requisite for the life of such men are very dear.

The tendency therefore must be for craftsmanship to be constantly and increasingly inferior in value.

The craftsmanship of the trade is sub-divided, and this is chiefly due to the required amount of skill varying and to the fact that silver is always bought in its bullion state, that is, in solid lumps or bars, and the first process is to chip off a lump of the estimated required size to make up a particular article. This is then melted and mixed with its alloy by the casting and alloying mistry, and is usually cast into a thinnish-pebble shaped mass. This is then passed to the Garhia, who beats it out into a sheet of metal of the required size and he passes it on to the shape-making mistry, who beats up the required shape of the article. It then passes to the repousse and chasing mistry, who works in the required patterns, afterwards to the finisher, who cleans the work, and produces the various surfaces as desired. It then passes either to the person who is to use it or to the trader who originally supplied the silver.

The payment for the whole of this work is on a weight basis, thus, if a casting mistry is given 100 tolas of pure silver and in alloying adds copper to $6\frac{1}{2}$ per cent. or one anna in the rupee, he provides alloyed silver Rs. 106-4-0 in weight and is paid half anna per tola for his work.

The Garhia gets	$\frac{1}{2}$ anna	per tola	for his labour.
The shape-maker gets	$1\frac{1}{2}$ annas	ditto	ditto.
Repousse gets	2	ditto	ditto ditto.
Polisher gets	$\frac{1}{2}$ anna	ditto	ditto.

The wastages on the various processes through which the silver passes on its progress towards the finished article amount to approximately the amount of alloy and the dealer only expects to receive Rs. 100 weight on its return to him.

Thus the trader has paid Re. 1-4-0 per tola for his product and has (provided he has paid 15 annas per tola for his silver) he states as his profit 2 annas per tola for his risk, management and outlay as he is selling to us at Rs. 1-6-0 per tola.

It will be seen that there are two opportunities of increasing earnings in the process, and that either the alloying mistry can increase his earnings by substituting copper for silver or the dealer may increase the proportion of alloy on his own account, and therefore that there are two main difficulties in connection with this trade which always work towards the depreciation of this artistic craft in the eyes of the public, viz. :—

- (a) that so long as the alloying of silver can be carried on by fraudulent traders or craftsmen without there being any ready means of detecting the fraud, the buying public can have no confidence in placing orders ; and
- (b) that so long as uniform rates are paid for labour and in its higher branches is paid for at such low rates and those rates are based on weight production only, it is evident (especially in these days of increased cost of living) that in order to increase his income from labour the craftsmen must of necessity turn out more work with its natural result of deterioration.

Standardization of silver used would seem to be the best way of overcoming this difficulty, and in 1915-16 the question of a system of Hall-Marking for India was generally discussed at a well attended special meeting of the traders held in Lucknow on the 18th December, 1915, under the Chairmanship of the Deputy Commissioner. The result was briefly as follows:—That a system of Hall-Marking was most desirable, but that at first it should be optional, and that the alloy value of the article should be at the option of the dealer and that an assaying office should be started and conducted by Government in each province, and that a nominal sum should be paid to Government for stamping the goods with the actual alloy value.

It was evident therefore that the Lucknow trader on such a basis was, generally speaking, at that time anxious to do a *bona fide* trade, and it is a great injustice to honest traders that they

cannot have some means of ensuring a fair competition, as it is of course impossible for the honest trader to compete with those whose cost for material is half what they say it is.

It is well-known in the silver trade in India that in a large number of cases goods are often sold in such a way as to constitute a fraud on the public; and that unless the public can have some guarantee that the quality is as described, there can be no possible expansion in this trade.

The question of Hall Marking was taken up for establishment throughout India, and it was eventually decided as the system of Hall Marking which had made England supreme the world over in the silver trade was the result of private enterprise through the establishment of Guilds and not through the agency of Government, that the establishment of a Hall Marking system should be left to unofficial initiative. In Lucknow, however, that is an entirely impossible proposition, as the output is not in sufficiently large quantities or the trade sufficiently flourishing to either find the money for such work or to be a practical trading proposition.

My experience in dealing with these goods in the Emporium is that such trade as we do is based on an assumption by the public in India that because the silver is purchased from a Government institution it is of genuine quality, and though in this matter we can only quote what has been told us by the supplier, it is understood by the buyer as a general guarantee if not actually a specific guarantee.

For any trade outside India either a Hall Mark or some form of equivalent is essential, and so far no single piece of Indian silver of this province has been sold by this Emporium to any trader or private buyer. At the British Industries Fair of 1920 no English or European buyer would consider it for a moment as it was not stamped.

It is evident therefore that unless some action is taken to protect the buyer and Government through this Emporium, no improvement can possibly take place and we may some day find ourselves in a difficult situation due to want of some measure of protection.

What then can be done to improve this industry, and at the same time to provide the protection necessary ?

In writing a series of brief reports on the industries affected by the establishment of the Emporium, forwarded to the Director of Industries about March, 1922, I made the following suggestion :—

“The adoption in India of the manufacture of silver articles from rolled sheet silver would be of immense advantage to the craft, but no rolling mills are in existence. I have tried sending silver to the Calcutta Mint for alloying and rolling into sheet with unsatisfactory results. If a mill could be purchased which would roll silver accurately up to 16" wide and we could issue the silver to the makers for making up to our requirements and also sell to them for use in their own trade, and we were permitted to stamp such with a lion or other device, not only would production be much cheaper, but the buyer would be much happier with his purchases. This should avoid any trouble of excess of alloy and consequent dishonest dealing.”

The idea is therefore to establish at the school as part of its equipment rolling plant for silver, that will produce sheet silver of perfect surface up to 16" wide, as from this width a bowl 12" wide can be made up.

The advantage of providing such plant would be—

- (1) The doing away of useless labour.
- (2) That all alloying would be done by Government at the same percentage of alloy as standard silver in England.
- (3) That silver sheet so alloyed could be stamped with our stamp as a guarantee of its excellence and the articles made up from it could also be stamped.
- (4) That cheating in alloying would become a thing of the past.
- (5) That wages obtained by silversmiths could be raised, as the first cost of production would be very much lessened, whilst the finished product could be sold at the same price as now, though 50 per cent. higher prices could be obtained.

- (6) There would be no waste and no costs when the machine was not actually rolling metal, but there would be a good return when the machine was at work.
- (7) That the output of silver articles could be doubled, and the long and tedious delays which are now constantly met with would be less than halved.
- (8) That the silver so produced would be of even thickness throughout, and would not suffer, as the sheets made by hammering do from thick and thin places.
- (9) That the surface finish of sheet silver so produced would be much better, and would therefore need less burnishing, and a high resulting finish be much easier obtained at the same price per tola.
- (10) Finally, that the crude effects prevalent to-day, and now tending to keep Lucknow silver in bad repute, would largely be removed.

Therefore the employment of a flattening mill of adequate width and power would do much to improve the industry.

At the request of the Director this suggestion was placed before the Advisory Committee of the school, who resolved that enquiries should be made and recommended the adoption of this plant as soon as finances would allow.

Numerous enquiries have resulted in quotations from the best source of supply obtainable, viz., W. H. A. Robertson & Co., Ltd., Lynton Works, Bedford, who are said to be more experienced in the manufacture of cold rolling mills of all description than any other firm in England, and are supplying mills for rolling silver and other material to the leading firms in England and abroad.

Complete specifications have been received for alternative types and the following has been recommended as being adequate and the cheaper of the two mills:—

	£
One standard "B" type cold rolling mill	... 700
One 50 H. P. squirrel cage induction motor to suit our current supply	... 125

This plant would be fixed free by Messrs. Alfred Herbert (India), Ltd., of Calcutta, who are their agents and would run the plant on trial free of charge.

In addition to this a small crucible furnace for melting and alloying would be required and the necessary annealing furnace and baths would complete the equipment.

The total cost of these additions would probably be about £175.

Thus the cost of the complete installation would be £1,000.

I am informed that the United Provinces Electric Supply Company can supply current and they estimate that the cost of adapting the supply mains and carrying them to the motor switch board would be Rs. 1,500.

Thus for £1,100 the silver trade of Lucknow could be immensely improved. Honest dealers would not any longer be placed at a disadvantage. A Government guarantee would be stamped on every piece of silver issued, and the buying public who have lost confidence (but like the work) would confidently place orders and purchase silver ware made up from silver thus produced.

The second difficulty (b) due to uniform rates for labour on weight would, as the result of the installation of rolling plant of this sort, naturally pass away. The reason being that they would be using rolled sheet metal instead of hand beaten metal. In Moradabad there is no question of a per weight basis in charging for work. Those craftsmen who are capable of high class work are capable of high grade pay, therefore there would be great opportunities of increasing the pay of good craftsmen, and instead of the craftsmen of Lucknow being as they are at present through even and regular pay on weight basis, they would be paid according to the quality of work produced. This would enable the experienced craftsmen to be placed in a far better position and would enable the Lucknow silver trade to be placed on a better footing and in a far better position in India than it had ever been.

I trust that the establishment of the rolling mill will be a possible contingency in the near future, as I am convinced that

its being afforded as part of the school would do an inestimable amount to place the Indian trade in silver into flourishing condition.

Note on Cotton Printing in Farrukhabad and Lucknow by Mr. H. B. SHROFF, B.Sc., A.M.S.T., etc., Principal of the Government School of Dyeing and Printing, Cawnpore.

Character of designs.—In Lucknow one does find the designs more Indian in character, their leanings being particularly towards Muhammadan art than at Farrukhabad. The Farrukhabad printing is outrageous copying of the Western art for which it chiefly caters. There is reason for the Lucknow printing to preserve its Indian character, as over two-thirds of the production is for the Indian market and only one-third for export. The Hindu mythological designs are conspicuous by their absence at both these places. Their introduction is sure to be popular for the export market if proper colour schemes are adopted in their execution. The Hindn pilgrims at various places of pilgrimages are in the habit of purchasing printed cloths, such as scarves, women sarees, etc., and it would be a special advantage if printed designs bearing particularly on the Ramayana and Mahabharat could be had for presentation to friends and relatives of pilgrims on their return home, which is the usual practice amongst them. The designs available at present are crude and are rarely able to carry home the ideas underlying them in an efficient or conspicuous manner. In this connection it would be interesting to make a study of the printing trade of Jaipur products which are particularly well-known and much sought for by the pilgrims. The merchants, however, are not prepared to experiment in a new field, but they would be willing to carry them out and will subsequently lead to general adoption by them, if they can be assured of the sale of these prints. It is possible that the line of designing developed this way may also prove useful and fruitful to the carpet industry of this province. Mr. Heard, Principal of the School of Arts and Crafts, Lucknow, believed that export market was sure to grow up and will readily take to Indian products having characteristically Indian designs. He

was afraid that the Farrukhabad printing trade is bound to suffer in course of time as the designs are not of Indian character. I do not see so much danger, as the type of work carried out involves a very large amount of manual labour in both block cutting and actual printing of the material that it would not be possible for European or American producers to compete if they tried to produce them. The danger is, however, in a different direction and attempts to avoid it must engage the attention of those in trade from now. The designs worked must be such as cannot be carried out by machine printing. But this must in no sense be confused, and all attempts must be directed to work out the designs in such a way as to reduce the labour to a minimum or as would lead to production of improved effects. Thus, in many cases introduction of metal blocks, felted blocks and printing by stencils would be a distinct advantage. The present method cannot be completely replaced but partial substitution, keeping exactly in view the limitations of each method and making most of their individual possibilities will be of undoubted advantage. The corresponding increase in cost of production, if any, will be more than balanced by production of better effects which will surely bring in better prices.

The art of printing.—The art of printing in Lucknow is not so well advanced as in Farrukhabad, which is distinctly superior so far as production of colours is concerned. The printing with vegetable colours is practically extinct at both these places. The Lucknow printers have no knowledge of printing very fast colours such as the mordant colours or the vat colours. Even the methods used for printing basic colours on cotton or of basic and acid colours on silk are often not correct. The method of steaming the apparatus used is defective and the Lucknow one is more crude as compared to Farrukhabad. The steaming in Lucknow leads both to wetting by boiling water as well as by drops of condensed water and results in smudging of the colours. In Lucknow the cotton cloth used for printing is mainly *unbleached* longcloth, nainsukh, twill and gin. The latter two are used to produce dressing cloths and the former for production of curtains, bed covers, table cloths, lehafs, furd, etc. In many

cases use of bleached cloth is preferable. The Azamgarh silk-satin mainly finds use for production of silk curtains, table cloths, etc.

Proposals for helping the trade.—I have divided my report into two distinct heads: (1) designing and (2) art of printing; and these two only when combined together will lead to success in the textile printing, and equal importance is attached to both in this connection. Further, both these heads represent distinct provinces for the work of the Lucknow School of Arts and Crafts and the Cawnpore School of Dyeing and Printing, and close co-operation of the two is what is needed. A section for design suitable for cotton printing and on characteristic Indian lines should be started in the School of Arts and Crafts. Colour schemes representing best harmony should be worked out there. The block cutting and stencil cutting should be looked after by the School of Dyeing and Printing, which should undertake to carry out these designs on different and suitable textile materials. But this would mean a very great strengthening of the printing section of this school which as at present is anything but satisfactory. There is only a printer who knows very little of either block cutting or of the modern methods of application of different colours. To strengthen this department I suggest the following:—

I.—Establishment—

	Rs.
(1) Assistant Printing Master ...	100 20 200 per mensem
(2) Block or stencil cutter ...	50 5 60 „ „
(3) Bearer ...	12 14 14 „ „

II.—Supplies and Services—

	Rs.
(1) Wood, metal stencils, cloth, silk, etc. ...	1,000
(2) Dyes and chemicals, etc. ...	600
(3) Three scholarships at Rs. 20 per mensem for 10 months ...	600

III.—A non-recurring grant of Rs. 15,000 should be given to meet expenses as follows :—

	Rs.
(1) Steaming cottage... ..	5,000
(2) Colour making pans	2,000
(3) Aerographs machine set	1,000
(4) Hand roller printing machine	3,000
(5) Blocks, rollers and sundries	1,500
(6) Fitting up, etc., at 20 per cent.	2,500
Total	<u>15,000 only.</u>

The strengthening of the printing section of the school will provide for a third-year course for specialised training in printing to our foreman dyers class and also for some of the artisan class boys who come again to school after their one year's training. Just as there is an artisan for dyeing, we can have a special artisan class for printing of one year's duration and the number of admission may be limited to only five. In order to encourage specially from printing centres of the province who are generally not willing to forego their earning—three scholarships as proposed may be awarded. Should this section prosper and the people begin to see the advantages of study at the school, a gradual reduction in the scholarships awards will be possible.

New lines of development in printing centres.—I have compared notes with Mr. Heard regarding Farrukhabad and Lucknow printing trades and their future development, particularly my idea about introducing machine printing for mass production of shirting cloths and chintz now largely imported a type of work eminently suited for printing by machine, and one warranting putting down of a bleaching and finishing plant which will be indirectly of great assistance to the existing hand block printing trade. I have found him agreeing with me as regards these future possibilities. The enlarged printing section of the school should be able to find necessary trained men for the purpose.

CHAPTER VI.

DIRECTORY.

(1) List of Banks.

1. The Imperial Bank of India.
2. The Alliance Bank of Simla, Limited.
3. The Allahabad Bank, Limited.
4. The Tata Industrial Bank, Limited.
5. The National Bank of Upper India, Limited.
6. The Bank of Oudh, Limited.
7. The Lucknow Trading Bank, Limited.
8. The Rupee Bank and Trades, Limited.
9. The District Central Bank, Lucknow, } Co-operative
10. The Central Bank, Mohanlalganj, } Banks.

(2) List of Boot and Shoe manufacturers

1. Messrs. S. C. Chatterjee and Sons, Nazeerabad.
2. The Lucknow Boot and Shoe Factory, Limited, Nazeerabad.
3. The Punjab Boot and Shoe Factory, Nazeerabad.
4. K. B. and Company, Aminabad Park.
5. National Boot and Shoe Factory, Nazeerabad.
6. The Export and Import Corporation, Limited, Nazeerabad.
7. Star and Company, Nazeerabad.
8. Oudh Boot and Shoe Factory, Nazeerabad.
9. M. D. Eramau, Station Road.
10. Messrs. Carlton and Company, Limited, Hazratganj.
11. Messrs. Friend and Company, Hazratganj.
12. Messrs. E. S. Beg and Company, Hazratganj.
13. The Standard Boot and Shoe Factory, Abbot Road.

(3) List of Calico Printing manufacturers.

1. Kallan Khan Rasul Bux, Rakabganj.
2. Kudrat Ali, Jhawaintola.
3. Nakohhed, Jhawaintola.
4. Abdul Rahim, Jhawaintola.
5. Lala Babu, Durbijaiganj.
6. Shakur Ali Kadim Ali, Durbijaiganj.

List of Dealers.

All chikan dealers and cloth dealers. Also the manufacturers.

(4) List of dealers in Chikan work.

1. Messrs. Ram Nath Kedar Nath, Hussainabad.
2. Messrs. Faiz Bux, Alla Bux, Parchewali Gali, Chowk.
3. Messrs. Ganga Prasad Ganesh Prasad, Chowk.
4. Messrs. Chunni Lal Bhagwan Das, Chowk.
5. Messrs. Ghasi Ram Kedar Nath, Chowk.
6. Messrs. Bhola Nath Kapur and Company, Chowk.
7. Mr. Ajodhia Prashad, Chowk.
8. Mr. Lal Behari Tandoa, Chowk.
9. Munna Maharaj, Hotel Contractor, Chowk.
10. Arts and Crafts School Emporium.

N.B.—Munna Maharaj has the contract to sell in the hotels in the Civil Lines when the tourists come there.

Principal Agents.

1. Wajid Husain, Par Hussanganj.
2. Mijjan, Chowk.

(5) List of Dairies.

1. The Diamond Dairy Company, Cantonment Road.
2. The King Dairy, Cantonment Road.
3. The Coronation Dairy, Outram Road, Lucknow.
4. The National Dairy, Limited.

(6) List of Flour Mills.

1. Syed Muhammad Ali's Flour Mills, LaTouche Road.
2. Babu Bishambhar Nath's Mill, Daliganj.
3. Muhammad Ali's Flour Mill, LaTouche Road; near National Bank of Upper India.
4. Vaish Flour Mill, Grain Market, Ganeshganj.
5. Agarwal Flour Mills, Hewett Road.
6. Fatehganj Flour Mills.
7. Zarif Husain Khan, Fatehganj.
8. Isa Brothers, Bakramandi.
9. Dildar Husain, Lalbagh.
10. Muhammad Hadi and Murtaza Husain, Subhannagar.
11. Pandit Amirdha Nath, Subhannagar.
12. Nabi Bux, Sadatganj.
13. Ramdin Lal, Ranikatra.
14. Bala Pershad Flour Mills, Ahata Fakir Muhammad.
15. Babu Pearey Lal, Deorhi Agha Meer.
16. Akbar Husain, Ramganj.
17. Lala Panna Lal, Dalmandi.
18. Babu Bishambhar Nath, Banwaligali.
19. Pandit Shiva Nath, Thakurganj.
20. S. Mazhar Ali, Thakurganj.
21. Sheikh Amir Husain, Aishbagh.
22. Steam Printing Press and Flour Mills, Narahi.

(7) List of Gota dealers.

1. Lala Ram Narain, Chowk.
2. Messrs. Debi Dass Madan Lal, Chowk.
3. Messrs. Pershadi Lal, Kundan Lal, Chowk.
4. Messrs. Lal Behari Kedar Nath, Chowk.
5. Messrs. Badri Das Mul Chand, Chowk.
6. Badri Das Chedi Lal, Chowk.
7. Messrs, Jawahir Lal Govind Pershad, Chowk.

(8) List of dealers in Gold and Silver.

1. Messrs, Ghulab Rai Govind Pershad (Khnnkhdnjoe), Chowk.

2. Messrs. Jhabbu Lal Prabhu Dayal, Goldarwaza, Chowk.
3. Messrs. Gaya Pershad Shambhu Nath, Chowk.
4. The Indian Curio Store, Chowk.
5. Lala Bhagwan Das, Chowk.
6. Messrs. Ganesh Das Mahesh Das, Chowk.
7. Messrs. Iswri Pershad Mahadeo Pershad, Chowk.
8. Lala Janki Mul, Chowk.
9. Messrs. Manohar Das Bholu Nath, Chowk.
10. Lala Ghulan Chand, Chowk.
11. Sri Krishna.
12. Ganesh Lal, Jewellers, Hazratganj.

(9) List of Hosiery manufacturers.

1. P. L. Nanakshahi, Aminabad.
2. M. L. Gupta & Co., Aminabad.
3. Ram Nath alias Babbu, Aminabad.
4. Knitting Factory, Cantonment Road.
5. National Hosiery Factory, Sree Ram Road.
6. Nawab Saheb of Kuohcha Hata.
7. Lucknow Union Hosiery Works, Sanitary Road.
8. Prabhu Dayal and Gauri Shankar Ashrafabad.
9. Oudh Promod Works, Sree Ram Road.
10. H. L. Mukerjee, Aminabad.
11. Agarwal Brothers, Khetgali.
12. Kabir Panthi Works, Aminabad.
13. The Oudh Hosiery Works.

The last factory works with two power machines driven by electric motor, the firm is well managed by Mr. Tandon whose specialities are interwoven socks, and silk plated socks, i. e., with body of silk outside and coloured mercerised inside,

Number of men—6.

Outturn—8 to 10 dozen pairs daily.

(10) List of Manufacturers of Kamdani.

1. Nadir Husain, Chhnchrewali Gali.
2. Ohuttan Saheb, Chhnchrewali Gali.
3. Chunney Saheb, Yahiaganj.

List of dealers.

Gotawalas and manufacturers themselves and chikan dealers.

(11) List of Kilns.

Ram Dayal, Badshahnagar.
 Lala Ram Dayal, Hassanganj Par.
 Dori Bhagat, Babuganj.
 Mahabir, Chandganj.
 Ram Narain, Babuganj.
 Pitai Ram, Babuganj.
 Ram Dayal, Babuganj.
 Tara, Badshahnagar.
 Ganga Deen, Badshahnagar.
 Bhairon Pershad, Badshahnagar.
 Nanhey, Aishbagh.
 Debi Das, Aishbagh.
 Ganga Deen, Aishbagh.
 Shams Uddin Khan, Aishbagh.
 Sujhdeo, Aishbagh.
 Gur Das, Aishbagh.
 Gaffor Khan, Aishbagh.
 Mangal, Aishbagh.
 Jangli Das, Aishbagh.
 Jangli Das, Aishbagh.
 Lachman Das, Aishbagh.
 Musammat Mankora, Aishbagh.

(12) List of Brick Bhattas.

1.	Baiju, Munimi ...	...	...	500,000
2.	R. N. Sanyal ...	...	...	1,600,000
3.	Baiju, Ainak Saj	...	...	2,000,000
4.	Ram Pershad ...	...	...	200,000
5.	Judge Saheb's ....	...	...	100,000
6.	Ram Adheen ...	...	...	1,200,000
7.	Anaut Ram Tandon	...	...	300,000
8.	Sukh Lal ...	...	...	400,000

9.	Ram Adhin, Kurmi	...	...	2,000,000
10.	Parmeshwar, Kurmi	...	...	1,800,000
11.	Babu Lal	...	...	800,000
12.	Mata Deen	...	..	500,000
13.	M. P. Khanna and Company	...	...	1,500,000
14.	Dilawar Ali	...	...	2,000,000
15.	Abdul Gaffor	...	...	400,000
16.	Manabali	...	...	1,500,000
17.	Manabali	...	...	1,500,000
18.	Muni Lal, Khagji	..	...	500,000
19.	Mat Deen, Kurmi	...	...	1,600,000
20.	Gajamfar Ullah	...	...	1,000,000
21.	Annada Babu	...	...	600,000

N.B.—All in Alambagh.

In Kharka.

22.	Rai Bihari Lal ..	...	...	1,500,000
23.	Rai Bihari Lal ...	...	...	1,500,000
24.	Ford Macdonald	...	...	3,000,000
25.	Ford Macdonald	...	...	3,000,000
26.	Babu Ram Nath Tandon	...	...	1,500,000
27.	Ramji Lal	...	...	1,400,000
28.	Pandit Jai Narain	...	...	1,600,000
29.	Lala Hargovind	1,200,000
30.	Lala Hargovind	1,000,000

In Jail.

31 and 32.	Two bhattas	2,000,000
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In Talkatora.

33.	Ford Macdonald	2,000,000
34.	Hakimjee	1,200,000

In Bara Banki Road.

35.	Gur Prashad	...	...	1,500,000
36.	Ramjas Ram Dayal	...	...	2,000,000

In Kursi Road.

37. Girja Dayal Ikbal Bahadur.
38. Mata Deen.

In Sitapur Road.

39. J. N. Agarwal Brothers ... Recently started.

(13) List of Lime Factories.

1. Shyam Sunder Lal's Factory, Aishbagh.
H. P. of boiler—19 N. H. P.
Output—150,000 c. ft.
2. Ashrafabad Lime Factory, Ashrafabad.
H. P. of boiler—15 N. H. P.
Output—100,000 c. ft.
3. Suraj Bali Mill, Sadatganj.*
H. P. of boiler—12 H. P.
Output—50,000 c. ft.
4. Messrs. Ford and Macdonald, Thakurganj.*
H. P. of boiler—30 H. P.
Output—150,000 c. ft.
5. Ganga Ram Jaitli Mill, Thakurganj.
H. P. of boiler—15 H. P.
Output—25,000 c. ft.
6. Khajawa Lime Mills, Khajawa.*
H. P. of boiler—12 H. P.
Output—50,000 c. ft.
7. Ram Jas Ram Dayal, Babuganj.*
H. P. of boiler—18 H. P.
Output—50,000 c. ft.
8. Gur Prasad Lime Mills, Babuganj.*
H. P. of boiler—18 H. P.
Output—100,000 c. ft.
9. Rai Behari Lal's Mills Babuganj.*
H. P. of boiler—20 H. P.
Output—75,000 c. ft.

N.B.—Those marked * are mills owned by contractors.

-
10. Durga Munim's Mills, Babujanj.*
H. P. of boiler—11 H. P.
Output—50,000 c. ft.
 11. Paras Ram Lodh Mull Mills, Babujanj.
H. P. of boiler—12 H. P.
Output—50,000 c. ft.
 12. Kanhaiya Lal, Babujanj.
H. P. of boiler—15 H. P.
Output—75,000 c. ft.
 13. Basaha Lime Factory on Kursi Road, 6 miles from Lucknow.
H. P. of boiler—11 H. P.
Output—40,000 c. ft.
 14. R. N. Sanyal's Mills, Alambagh.*
H. P. of boiler—18 H. P.
Output—75,000 c. ft.
 15. Chaubejee's Lime Mills, Alambagh.
H. P. of boiler—15 H. P.
Output—75,000 c. ft.
 16. Pandit Lime Mills, Alambagh.
H. P. of boiler—12 H. P.
Output—25,000 c. ft.
 17. Mahabali Lime Mills, Alambagh.
H. P. of boiler—14 H. P.
Output—50,000 c. ft.
 18. Ram Nath Tandon's Lime Works, Aurangabad.
Output—40,000 c. ft.
 19. Messrs. Ford and Macdonald, Bhadrakh.
H. P. of engine—12 H. P.
Output—25,000 c. ft.
 20. Hargovind Lime Mills, Bhadrakh.
Output—30,000 c. ft.
 21. Rae Saheb Jai Narain's Mills, Bhadrakh.*
Output—50,000 c. ft.
 22. Rangi Lal Mills, Bhadrakh.*
H. P. of boiler—18 H. P.
Output—60,000 c. ft.
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N.B.—Those marked * are mills owned by contractors.

23. Pandit Lachhman Prasad Pandey Mills, Charbagh.*
 H. P. of boiler—25 H. P.
 Output—130,000 c. ft.

(14) List of mahajans or dealers in Lead leaf

1. Murli Manohar, † Malihabad.
2. Ram Lal Sita Ram, † Malihabad.
3. Ganga Das Debi Dayal, Malihabad.
4. Ganga Prashad Ishwari Prasad, Malihabad.
5. Laxmi Chand, Malihabad.

(15) List of dealers in Lenses for spectacles.

1. Muhammad Ibrahim and Company.
2. Muhammad Yakub and Company of Chowk.
3. The Scientific Technical Workshop, LaTouche Road.
4. Messrs. Siddique and Company, Aminuddaula Park.
5. Messrs. Lawrence and Mayo of Calcutta's branch at Hazratganj.

(16) List of dealers on mango grafts.

1. Munshi Safdar Husain.
2. Nabi Ahmad Khan.
3. Muhammad Ayub Khan.
4. Munshi Abdul Bari of Malihabad.
5. Horticultural Garden.
6. Wazeer Bagh.

(17) List of manufacturers of Panni or Lead leaf.

1. Sita Ram, Malihabad.
2. Ram Ghulam Ram Prasad, Malihabad.
3. Ganga Prasad, Malihabad.
4. Ram Sahai Ram Dayal, Malihabad.
5. Janki Prasad Lal Behari, Malihabad.

N. B.—Those marked * are mills owned by contractors.
N. B.—Those marked † are exporters and have Kachra machines.

(18) List of Perfumers.

1. Messrs. Muhammad Ali and Asghar Ali, Chowk.
2. Mr. Shakhawat Husain, Chowk.
3. M. Abdul Samad, Mansurnagar.
4. Muhammad Husain, Victoria Street.
5. The Musk Tobacco Factory, Ashrafabad.
6. Muhammad Umar, Chowk.
7. Kalesar Deen Telpurna (scented oils only).

The above is a list of dealers in perfumery goods imported from Kanauj, Ghazipur, Jaunpur or from elsewhere in India and a fair amount from Europe and abroad. Of actual manufacture of essential oils, attars or hair oils, not much is done in Lucknow. Messrs. Muhammad Ali Ashgar Ali are the only firm who make some of their own products, chief of which is the well-known Heena Attar.

(19) List of Printing Presses.

1. Newal Kishore Press, Hazratganj, the oldest press.
2. The Methodist Publishing House, Hazratganj.
3. Steam Printing Press, Nerahi.
4. Anglo-Oriental Press.
5. Perry's Printing Press, Hazratganj.
6. The Anglo-Arabic Press, Hazratganj.
7. Allahabad-Oriental Press-LaTouche Road.
8. N. N. Sivapuri Press, LaTouche Road.
9. Indian Commercial Press, LaTouche Road.
10. Talukdar Press, Kaisarbagh.
11. Bharat Bhusan Press, Fatehganj.
12. Phoenix Printing Press, Nadan Mahal Road.
13. Nishad Press, Naseerabad.
14. Artistic Printing Press, Bank Road.
15. Advocate Press, Naseerabad.*
16. Anand Press.
17. Hamdam Press.*
18. Seth Kundan Lal's Press, Barunikhandak.*

* Denotes Lithography Press for Urdu.

(20) List of dealers in Tobacco.

1. Messrs. Ahmad Husain Dildar Husain, Chowk.
2. Messrs. Muhammad Ali Asghar Ali, Razakibazar (shop in Chowk).
3. Mukdita Khan Saheb, Katra Abu Tarab Khan.
4. Messrs. Parshottam Das Govind Prashad, the Mushk Tobacco Factory, Ashrafabad.
5. Messrs. Fakir Bux Khuda Bux, the famous smoking tobacco maker, of Fatehganj.
6. Babban, Fatehganj.
7. Messrs. Ummaid Ali Kasim Ali, LaTouche Road.
8. Ramzani, Far Hussanganj.
9. Bakridi, Ghulam Hussain ka pul.
10. Mukhdum Bux, Naka Hindolna.
11. Khan Saheb of Malihabad.
12. Chhoti Shaza li ka pul (the shop is famous by this name which is the name of the place).

(21) List of Weaving Factories.

1. The Pali Rajput Wool and Cotton Works. This is a new venture by some educated Garariayas of Najibabad. They have nine fly-shuttle looms and six ordinary looms.

2. Bhargava Weaving Factory. Mr. Murari Lal Bhargava has started a factory with about 25 fly-shuttle looms.

(22) List of centres of weaving.

1. Aliganj, in Lucknow.
2. Kakori.
3. Malihabad.
4. Amethi.
5. Nagram.

Total number of looms 590 ordinary and eight fly-shuttle.

(23) List of karkhanas of Zardozi.

1. Tazdar Mirza, Victoria Street, behind Yatimkhana
2. Hadi Husain, Khaleki bazar.

3. Amanat Ali, Sadatganj, Chowk.
4. Muhammad Husain, Katari Tola.
5. Naseer Husain, 100, Ashrafabad.

(24) List of labour organizations.

1. Postal Union.
2. Oudh and Rohilkhand Railway Union.
3. Paper Mills Union and Cotton Mill Organization.

All these organizations have come into existence after the various strikes during the last two years. Every labourer working in any of these factories is a member and has to subscribe 2 annas for every Rs. 10 earned in a month. These organizations are not affected by caste considerations. The Oudh and Rohilkhand Railway Union is well organized with a paid Secretary and other paid officers. They have started a weekly named "Majdur".

(25) List of Technical Schools.

1. The Government School of Arts and Crafts.
2. The Government Technical School.
3. The Oudh and Rohilkhand Railway Technical School (aided) for European and Anglo-Indian apprentices of the Workshops of the Railway.

Trade Schools.

1. The Government School of Needlework.
2. The Pali Rajput Weaving School, Station Road.

Vocational Schools.

1. Reid Christian College, department of Commerce (now under the Lucknow University).
2. Pitman's Shorthand College, Golaganj, Lucknow (private).
3. Mubarak's Typewriting School, Hewett Road (private).
4. Telegraph Training School, Sanitary Road.
5. The Tailoring School, Al be Marle Tailors' Guild, Station Road (private).

-
6. The Hewett Engineering School, Lucknow (private), for training sub-overseers and draftsmen.

(26) Clay toy merchants.

1. Reoti Ram, Akbari Darwaza.
2. Ram Dayal, Aminabad Park.
3. Arts and Crafts Emporium.

(27) List of copper utensil makers.

Yahiaganj—

1. Sheo Charan.
2. Rup Chand.
3. Kandhai.
4. Radhey.

Aish Bagh—

5. Chhedi.
6. Gondai.
7. Ram Sarup.
8. Sunder.

Khale ki bazar—

9. Hira Lal.
10. Salig.
11. Bajrang.

Nala Begumganj—

12. Hanuman and Mangal
13. Kandhai.
14. Hardayal.

Takia Tikaitganj—

15. Tulsi Bhujua.

Yahiaganj ki Gali—

16. Ganga Prasad.
17. Prabhu.
18. Narain.

List of copper and copper utensil dealers—

1. Nanhey Mul Ram Das.
2. Narain Das Kanhaiya Lal.
3. Munney Lal Kagji.
4. Tulsi Ram Gaya Prasad.
5. Hazari Lal.
6. Mul Chand Babu Ram.
7. Bankey Lal the Kothiwalla (the biggest firm) } Dealers.
8. Prabhu Dayal }
9. Ram Charan }

(28) *List of moulded (kaskut) utensil makers.**Daliganj Thatheri basar) —*

1. Nanhey.
2. Narain.
3. Rajjan Lal.
4. Ram Ratan.
5. Ram Charan.
6. Ram Das.
7. Bharose.
8. Prabhu.
9. Ram Sahain
10. Mahabeer Bania.
11. Nanhey Ram Charan Kalwar.
12. Ram Narain Thather.

Huseanganj—

1. Bal Govind.
2. Narain Kalwar.
3. Ram Dayal.

Mehdiganj-Tikaitganj—

1. Pancham Behari.
2. Mewa Lal.
3. Puttu.

Aishbagh—

1. Lallan.
2. Sheodeen Ganga Deen.

Takia.—Maiku.

Yahiaganj (Dealers).—Same as for copper.

Daliganj—

1. Manna.
2. Lallu.
3. Bhaggu Maharaj.
4. Ram Gopal.
5. Raja Ram.
6. Bhola.
7. Ganga Deen.
8. Sita Ram.

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Mainpuri District



By

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FOREWORD.

MAINPURI is one of those districts which have suffered a good deal by an absence of railway communications. There was a time—not very distant—when it had many cottage industries in flourishing condition, e.g., the manufacture of brass and iron utensils, indigo, glass and glass bangles, shoes [*kamdar* and *kimukht* (shagreen)] and saltpetre, etc. Transport difficulties led workmen to move to Farrukhabad, Cawnpore and other places. A little trade in grain and *ghes* has survived in the town of Shikohabad which is situated on the main line of the East Indian Railway or in its neighbouring market of Sirsaganj which is close to the Kaurara railway station. Railway connection came too late when the industries had almost all died out.

2. The few industries still lingering in the district are :—

- (a) The manufacture of glass and glass bangles.
- (b) Saltpetre.
- (c) *Tarkashi* (inlaying wood-work with wire) with a little of
- (d) Shoe-making.

Among the resources of the district are :—

- (e) *Reh*.
- (f) *Kankar*.
- (g) Grains.
- (h) Cotton.
- (i) Sann hemp.
- (j) Tobacco.

Manj also occurs on embankments of gardens and in a few tracts of Kishni and Karhal parganas, but is not made much use of except for a little rope-making.

(a) *Reh*.—The district has large *usar* areas which “extend for miles” in parganas of Mainpuri, Ghiror, Baongaon, Karhal, Kishni, Barnahal and Mustafabad. “In certain parts they are covered with the saline efflorescence known as *reh*.” Only one such plot near Dannahar is said to extend over an area of

several miles. About 8,000 acres are said to be under *reh* in the district of which a little use is made at present by Dhobis and to a certain extent it is used in the manufacture of glass. A good description of the method of collection of *reh* and its use in glass manufacture will be found in the District Gazetteer and in Dobb's Monograph on Pottery and Glass Industries in the North-Western Province. But the glass made from *reh* is very crude and has always a tinge of green or black colour in it. For an improvement in glass it is desirable that the soda salt contained in *reh* be purified and made available in the form of purer carbonate of soda. The manufacture of soda from *reh* has been dealt with in an excellent article in the Journal of Industries and Labour of May, 1922, by Dr. E. B. Watson, Principal of the Technological Institute at Cawnpore. The manufacture of caustic soda from *reh* should also be undertaken, as this will enable the profitable utilization of the raw material which is available in the province, cheap and in abundance. The manufacture of this chemical is important, as for its supply Indian industrialists have nearly wholly to depend upon foreign countries. Although the processes of caustic soda manufacture are known, their application under Indian conditions should be preceded by a certain amount of experimentation to work out the details; this work can best be undertaken by our Provincial Technological Institute for the benefit of likely enterprising industrialists.

(b) *Glass and glass bangles.*—The report is unfortunately silent on the number of country furnaces in the district and their daily outturn, the amount consumed locally by the bangle-makers and the amount exported or available for export. The true extent of the industry cannot be gauged therefore. But Mainpuri has always been known to be a big distributing centre for glass bangles.

The industry is mostly a cottage industry, and it appears that its downward progress can be arrested by the introduction of intrinsic improvements, which will not be costly. But the problem needs investigation, which is worth undertaking by the department as early as possible.

A co-operative society of these bangle-makers will certainly tend to stabilise their business and help them to earn better profit by securing their requisites at cheaper prices than under the present system and by arranging for a more profitable disposal of their products. They could, in this manner, probably also economise by a distribution of work, e.g., by having a large furnace commonly shared by the workers of a particular village or place. The bangle-makers import their glass from Ferozabad. It will pay them to have a co-operative furnace of their own for making block glass for their needs.

(c) Large quantities of crude saltpetre are manufactured in the district. The Superintendent has not been able to ascertain the extent of this industry,³ but the Gazetteer says that at the time there were as many as 295 factories in the district producing about 21,000 maunds of crude saltpetre every year. Mainpuri is studded with old inhabited sites from which nitrous earth can be collected in large quantities. Almost the whole of the crude saltpetre is exported to Farrukhabad as the district has only four refineries with an annual outturn of 1,000 maunds refined saltpetre. These could hardly deal with more than 2,500 maunds of crude saltpetre. The manufacture of manure from saltpetre should be attempted in the district for purposes of export. Assam tea gardens are its great consumers and a direct connection should be established between the consumers and the producers. In the absence of the manufacture of manure, the refining of saltpetre should be carried on in the district and a direct export trade established with Calcutta, Bombay and Assam. It is strange that while the district produces so much *jaria* (crude saltpetre) itself, the refinery has to import a portion of its raw material from Bharatpur State at an enhanced cost.

(d) The very existence of so many places having a large population of sho-makers gives an indication that the industry was practised in the district on a very large scale. Leather worth Rs. 80,000 is still imported in the district and shoes are exported from it. The manufacture of shoes *kimukht* (*shagreen*) was carried on a large scale, but *kimukht* is not

available and their manufacture has declined. Salemshahi and Khurd Nok are now coming in increasing use. The industry can be saved by improving tanning facilities in the district.

(e) *Kankar* in nodular form is quarried in all parts of the district. Experiments carried on in the Technological Institute by Dr. Watson show the practicability of making cement from *kankar*. Full details will appear in a bulletin the publication of which is contemplated by the department.

(f) The district produces $1\frac{1}{2}$ lakh maunds wheat, but its few flour mills grind wheat only on commission. The export trade is all in raw wheat. The true extent of the trade cannot be known as the report gives figures for only two markets—both situated in one part of the district.

(g) Cotton grows in about 36,000 acres, and with an average yield of five maunds to an acre the district must be producing over 175,000 maunds of *kapas* every year. The three ginning factories gin only 42,000 maunds. The rest must be exported as unginmed *kapas*. The district should try to work it itself. The gins are situated all in the Shikohabad tahsil. Mainpuri and Bhongaon are both railway stations, but have not yet attracted capitalists.

(h) The area under sann hemp is 2,000 acres. The only use to which it is put is the manufacture of ropes. The processes of retting, scutching and extraction are very primitive and the sann fibre is therefore very coarse and muddy brown in colour. Arrangements have been made by the department for experiments in devising suitable hand machines for extraction of fibre, etc. Much can even now be done by improving the cultivation and retting.

The fate of munj is worse at present. It is suitably used for the manufacture of ropes or for thatching. It does not grow in the district in sufficient quantities for undertaking large manufactures, but there is ample room for organizing the manufacture of baskets and string from it.

Rambans (aloe) can be easily grown in the district and its plantation should be encouraged.

(i) Mainpuri stands fourth in the province in its area under tobacco and grows both chewing and smoking tobacco. Most of the smoking tobacco leaf is exported. It would be profitable to manufacture the smoking powder and then export it. The leaf is of good quality. The modern style is leaning more towards the smoking of cigarettes and cigars. The manufacture of cigarettes, or at least cigars, appears to be a proposition worthy of consideration by industrially inclined capitalists of the district. The finest slices of betelnut are called *safran* (saffron). They resemble the saffron fibres very much and sell at Rs. 4 a seer. The trade in the manufacture of this chewing powder is expanding and an examination of the conditions leading to its expansion would have been interesting.

(j) *Jail industries*.—Tiles are not much used in the district outside Government buildings. Thatches or kachcha roofs are common. I don't believe the local jail will be well advised to undertake their manufacture for outside public. Wider tiles commonly known as "Frizzonié pattern" would prove to be too costly, while there will not be much use for country tiles in the town which is infested with monkeys.

3. The spirit of industrialism has gone from the district and special efforts are necessary in order to develop it now. The transport facilities obtained with the opening of the Shikohabad-Farrukhabad branch of the East Indian Railway will facilitate the task to a certain extent, but vigorous action and drastic measures will have to be taken before any hope can be entertained for the upheaval of the industries. In order to arrest the further decline of the lingering industries the first need of the district is a well equipped polytechnic school. The woodwork of Mainpuri which was famous has declined very much. The carver and inlayer who obtained a certificate of merit in the Delhi Exhibition and sold his carved gate at a very good price has died and facilities for teaching the art to the younger generation are disappearing. A well-equipped carpentry class is the prime necessity in a technical school where *tarkashi* and carving should be taught in addition to cabinet making, polishing and varnishing. Government has recently sanctioned two scholarships

tenable for two years to be given to students who may care to learn the art of wire in laying in the Lalsingh Man Singh Kshattriya Charitable Institution. Full advantage should be taken of this facility by the public. Brass is used in many manufactures of the district, e.g., wire inlaying, making of hinges, locks, handles, etc., for the boxes and classes for teaching the manufacture of these things along with the manufacture of domestic utensils of brass and iron will revive the old industry in no time. The school should also have a handloom weaving class.

4. Fortunately for Mainpuri, a munificent gift has been made by Kunwar Lal Singh for the purposes of such a school. He has already constructed a building called the Lal Singh Man Singh Kshattriya Charitable Institution, costing about 1½ lakhs of rupees. A *tarkashi* class has been already opened there with the funds provided by Government and the donor has himself added classes in handloom weaving, caning of chairs and basket making by the blind. A scheme for the opening of carpentry and handloom weaving classes is under discussion. The need for such an industrial school is immense and immediate, and it is hoped some way will be found to avail of the beneficence of the donor.

5. The Industrial Chemist to Government, Mr S. T. Gadre, has kindly revised the report and my special thanks are due to him for the valuable service rendered. Thanks are also due to the following gentlemen for rendering help in the survey work:—

1. V. A. Stowell, Esq., I.C.S., Collector.
2. J. V. S. Wilkinson, Esq., I.C.S., Collector.
3. B. K. Ghare, Esq., of the Agricultural College, Cawnpore.
4. O. V. Calder, Esq., I.C.S., Officiating Collector.

6th March, 1923.

CHAMPA RAM MISRA.

CHAPTER I.

INTRODUCTION.

1.—General features of the district.

Boundaries—

North.—Etah district.

East.—Farrukhabad district.

South.—Etawah and Agra districts.

West.—Agra and Etah districts.

The district is an extensive level plain, broken only by the sand ridges on the western border, the rolling sand hills and undulations of the Kali and Isan Nadis and the ravines of the Jumna to the south-west.

The soils of the district are typical of the Indo-Gangetic plain.

2.—Population.

The population of the district was recorded in 1329 fasli as 797,624 souls.

3.—List of fairs (attendance above 1,000).

Tahsil.	Locality.	Name of fair.	Date.
Mainpuri...	Mainpuri ...	Devi fair ...	<i>Chait badi</i> 8th.
	Do. ...	Do. ...	<i>Chait sudi</i> 8th.
	Aunchha ...	Mahadeo fair	<i>Bhadon sudi</i> 15th.
	Bidhaun ...	Makrand fair	<i>Katik sudi</i> 15th.

Tahsil.	Locality.	Name of fair.	Date.
Bhongaon...	Allahabad ...	Devi fair ...	Chait sudi 6th.
	Jakha ...	Do. ...	Chait sudi 5th.
	Manohhana ...	Do. ...	Chait sudi 8th.
	Ratanpur Bara	Do. ...	Chait and Kurr.
	Bhanwat ...	Mahadeo fair	Katik sudi 2nd.
	Dayanatnagar	Mota-Mahadeo fair.	Phagun badi 13th.
	Jogpur ...	Mahadeo ...	Phagun sudi 13 h.
	Mazra Debipur	Do. ...	Bhadon sudi 6th.
	Rui Sanaura...	Mahadeo ...	Bhadon sudi 6th.
	Bhongaon ...	Ram Lila ...	Kurr badi 13th.
Mustafabad	Mustafabad ...	Ram Naumi	In Chait.
	Santhi ...	Sheoratri ...	Phagun 13th.
	Pain'chat ...	Jakhia ...	In Magh, when full moon is visible on Sunday.

4.—List of ferries.

River.	Name of ferry.	Name of village.
Kali Nadi ...	Rajghat ...	Rajghat.
Do. ...	Bhanau ...	Bhanau.
Do. ...	Mezra ...	Do.
Do. ...	Aurindh ...	Do.
Do. ...	Hannu Khara ...	Hannu Khara.
Do. ...	Kakarghata ...	Kakarghata.
Do. ...	Alupura ...	Alupura.

MAINPURI DISTRICT.

5.—List of markets.

Tahsil.	Town or village.	Market days.
Mainpuri	Manchhana	Sunday and Wednesday.
Do.	Nauner	Monday.
Do.	Kuraoli	Monday and Friday.
Do.	Ghiror	Tuesday and Friday.
Do.	Darbah	Monday and Thursday.
Do.	Kosma	Sunday and Thursday.
Bhongaon	Allahabad	Monday and Friday.
Do.	Aung	Wednesday and Saturday.
Do.	Kundi	Wednesday and Sunday.
Do.	Tarapur, Masra Hatpao.	Ditto.
Do.	Kusmara	Monday and Thursday.
Do.	Bewar	Tuesday and Friday.
Do.	Katra, Masra Saman.	Sunday and Thursday.
Do.	Chaurapur	Tuesday and Saturday.
Do.	Kishni	Ditto.
Do.	Mahuli-Shamsherganj.	Monday and Friday.
Do.	Ramnagar	Monday and Thursday.
Do.	Nabiganj	Ditto.
Do.	Arsara	Sunday and Wednesday.
Do.	Kumhaul	Tuesday and Saturday.
Do.	Laigaon	Sunday and Thursday.
Do.	Chitain	Monday and Friday.
Do.	Ali Khera	Tuesday and Friday.
Do.	Barauli	Friday.
Do.	Lalupura	Wednesday.
Karhal	Karhal	Sunday and Thursday.
Do.	Kishaopur, Masra Patara.	Tuesday and Saturday.

Tahsil.	Town or village.	Market days.
Karhal	... Kurra Khas ...	Wednesday and Saturday.
Do.	... Rampura, Mazra Kurra.	Thursday and Saturday.
Do.	... Makbiani, Mazra Ninauli.	Tuesday and Saturday.
Do.	... Urthan ...	Monday and Friday.
Do.	... Dalelnagar ...	Ditto.
Do.	... Dihuli ...	Monday and Saturday.
Do.	... Nawa Tehragaon	Tuesday and Saturday.
Shikohabad	... Shikohabad ...	Tuesday and Friday.
Do.	... Sirsaganj ...	Monday and Wednesday.
Do.	... Bharaul ...	Wednesday and Saturday.
Do.	... Sarhupur ...	Tuesday and Friday.
Mustafabad	... Khairgarh ...	Monday and Friday.
Do.	... Mustafabad ...	Sunday and Thursday.
Do.	... Parham ...	Tuesday and Saturday.
Do.	... Pharha ...	Monday and Friday.
Do.	... Uresar Gajalhar Singh.	Sunday and Wednesday.
Do.	... Jasrana ...	Six days except Monday.
Do.	... Bahat ...	Wednesday and Saturday.
Do.	... Kusiari ...	Ditto.
Do.	... Shekhupur Hat-want.	Thursday.

6.—List of roads.

Length in miles.

Metalled roads—

Grand Trunk road, Aligarh, Etah and Cawnpore section	...	...	37
Agra, Mainpuri and Bhongaon Trunk road	...	...	46
Etawah, Bewar and Fatehgarh road	...	...	20
Etah and Shikohabad	...	...	20

	Length in miles.
Shikohabad railway feeder road	1
Jasrana and Mustafabad road	7
Sirsaganj and Batesar road	2
Ghiror and Jasrana road	10
Ghiror Kosma railway feeder road	3
Mainpuri and Kuraoli road	11
Mainpuri and Etawah road	18
Shikohabad and Sirsaganj road	7
Shikohabad and Batesar road	8
Kaurara railway feeder road	1
<i>Unmetalled roads—</i>	
Shikohabad and Batesar road	3
Ghiror and Kuraoli road	18
Jasrana and Baragaon road	2
Sirsaganj and Araon road	6
Sirsaganj and Etawah road	12
Mustafabad and Pharha road	6
Sirsaganj and Karhal road	16
Karhal and Kishni road	19
Bhadan railway feeder road	2
Mainpuri, Bhanwat and Saman road	17
Karimganj and Bichhwan road	3
Chhachha and Ali-Khera road	3
Madar Darwaza road and Isan Nadi road to distillery road	1

Besides these, there are others whose length is about 142 miles.

7.— Cattle Census, 1920.

Name of animal.	Number.
Bull	116
Oxen	138,045
Cows	55,441
Calves	70,235
Buffaloes	155,033
Goats	78,606

INDUSTRIAL SURVEY.

Name of animal.	Number.
Horses and ponies	14,317
Mules	172
Asses	6,915
Camels	787
Total	<u>519,667</u>
Ploughs	78,229
Guns and carts	<u>12,551</u>

CHAPTER II.

DESCRIPTION OF THE VARIOUS DISTRICT INDUSTRIES.

1.—Chemicals.

(1) *Reh*.

THE district has a very large area of 'usar' land which is full of reh. One such plot with an area of 21 sq. miles may be seen at Dannahar. It extends from mile 10 to mile 12 of the Ganges Canal, Cawnpore branch. Dannahar is connected with Mainpuri and Shikohabad by a metalled road. Many such plots can be seen interspersed with cultivation alongside the Cawnpore branch canal between its head and milestone 53. The estimated area under reh in the district is shown below:—

Tahsil.	Area in acres.
Mainpuri ...	2,500
Shikohabad ...	429
Bhongaon ...	95
Mustafabad ...	800
Karhal ...	4,000
Total ...	7,824

(2) *Saltpetre*.

Crude saltpetre is made throughout the district.

The chief centres of its manufacture are:—

Mainpuri, Basra Sultanpur, Kuraoli, Ghiror, Jastrana, Parham, Badanpur, Shikohabad, Bhongaon, Kishni, Kosmara, Khizrapur and Karhal.

Saltpetre is manufactured from December to May by Chamars who take a theka from the local zamindars on payment of a royalty. The manufacture had increased to a very great extent during the period of war, but the demand has now decreased. Saltpetre is separated from earth by dissolving it in water and then evaporating the solution. The process is described in the report on the Industrial Survey of the Etah district. Merchants

usually come from outside to purchase saltpetre, though occasionally the manufacturer has to export it to Farrukhabad on his own account. The average price at present is Rs. 4 a maund. One karhai produces about a maund of crude saltpetre. The manufacturers can earn Rs. 12 to Rs. 15 per mensem.

(3) *Refining of saltpetre.*

The crude saltpetre is refined in one factory at Mainpuri which is worked with eight or nine men only and consumes about 2,000 maunds of jaria (crude saltpetre) annually. Jaria is bought in the district or is imported from Bharatpur state at Rs. 4-8-0 a maund. Annual outturn of refined saltpetre is about 100 maunds and that of salt 500 maunds. Saltpetre is at present sold at Rs. 11 a maund. Salt tax is Rs. 2-8-0 a maund from 1st March, 1922. Licence fee is Rs. 50 per year for a refinery.

Refined saltpetre is exported to Calcutta through agents of the Calcutta merchants. The market is very unsteady and prices fluctuate too much. The industry has declined after war with a fall in the demand. Prices went down suddenly, while the cost of production rose on account of a rise in the wages.

The process of refining has been described in the Etah report. Crude saltpetre is boiled with water till no more can be dissolved in it. The content is transferred to vats and allowed to cool down. After seven or eight days saltpetre crystallises out. The mother liquor is again allowed to stand for seven or eight days and an inferior variety of saltpetre is obtained. Or the liquid is in the first instance allowed to stand in vats for 12 days and only one variety is obtained. The liquor is in this case re-transferred to the boiling pans along with a fresh solution. Salt is separately obtained from the residue in the boiling pans (karhai).

Ten maunds of crude saltpetre would yield 5 maunds refined saltpetre and 2 maunds of salt.

2.—Grains and seeds.

(1) *General.*

Sirsaganj and Shikobabad are big centres for export of grain. Sirsaganj exported 4,500 maunds sarson to Calcutta

MAINPURI DISTRICT.

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and Karachi, 12,000 maunds arhar to Agra and Calcutta, and 3,000 maunds of castor seed to Manauri in Allahabad district. Castor seed was exported by Kishori Lal Mukandi Lal, railway contractors.

Shikohabad exports jwar, bajra, wheat and gram to the extent of 60,000 maunds every year.

(2) The following statement shows the agricultural products of the district in 1329 fasli :—

Crops.	Acreage.		Outturn per acre.		Price per maund.
	Irrigated.	Dry.	Irrigated.	Dry.	
			Mds.	Mds.	Rs. a.
Wheat ...	90,745	7,169	15	9	5 8
Wheat and gram	27,169	7,416	...	...	...
Wheat and barley	22,768	6,755	...	...	...
Barley ...	35,775	4,900	19	15	5 0
Barley and grain	56,510	20,359	...	...	...
Gram ...	4,905	19,822	12	9	4 8
Peas... ..	11,676	1,878	10	7	...
Potato ...	1,781	...	100	...	...
Tobacco ...	2,223	8	10	...	...
Poppy ...	3,017	9	8 cured leaves. ars. juice	...	...
Jowar ...	1,559	7,043	12	9	...
Bajra ...	55	21,746	10	8	7 4
Jowar and arhar	1,243	74,646	...	...	7 12

Crops.	Acreage.		Outturn per acre.		Price per maund.
	Irrigated.	Dry.	Irrigated.	Dry.	
			Mds.	Mds.	Rs. a.
Bajra and arhar	71	100,337	...	...	...
Early rice ...	225	3,197	12	7	8 0
Late rice ...	831	21,224	...	...	...
Maize ...	13,185	46,311	15	10	...
Fruits and root crops vegetables.	962	1,614	...	...	...
Kapas and arhar	4,057	19,048	...	...	...
Kapas alone ...	4,878	7,908	7	...	...
Jowar and chari...	3,279	4,361	...	...	...
Other fodder crops	53	4,159	...	...	...
Indigo ...	1,241	17	...	...	...
Sann hemp ...	569	1,569	6 fibre.	...	...

3.—Glass.

(1) *Block glass.*—Block glass is manufactured at Shikohabad in the Paliwal Glass Works, which was started by Babu Brij Lal Sharma Paliwal 1½ years ago. The factory stands near the Shikohabad railway station and works with 30 men—skilled and unskilled.

Sand is obtained from Lohsi, Bargarh and Shankargarh, soda from Calcutta and lime from Katni in the Central Provinces. Colours are all foreign. Fire clay is obtained from Jubbulpore and coal comes from Jharia at Rs. 15 a ton. The factory produces 80 maunds of glass daily. Average price of glass is Rs. 6 a maund.

The cost of manufacture of 80 maunds glass is said to come to Rs. 470 inclusive of wages and cost of supervision; Prices are:—

		<i>Rashmi.</i>	
		Per maund.	
		Rs. a.	
Dhani	...	7	8
Green	...	7	8
Firozi	...	6	8
White	...	5	8
Sunehra	...	5	8
Jamni	...	6	0
		<i>Sada (plain).</i>	
Sunehra	...	5	0
Green	...	6	0
Blue	...	5	12

It is claimed by the factory that their glass is superior to that of Firozabad and is exported to that place. It goes to Saharanpur, Serai Chhabila (district Bulandshahr), Marehra (Etah), Aral (Bihar) and Calcutta, besides being consumed locally.

The Western India Prospecting Syndicate started another factory near the railway station. It closed down after a very short life.

Block glass is also made in the district in country furnaces from reb obtained from large usar tracts so common throughout the district. Such furnaces are scattered all over the Shikohabad and Karhal tahsils. This glass sells at Rs. 2 per maund and is exported to Sialkot, Rawalpindi, Muttra, Gaya, Jubbulpore and Nasirabad.

For process of manufacture of glass and a description of furnaces, etc., the reader is referred to Mr. Dobb's Monograph on Pottery and Glass Industries in the North-Western Provinces.

(2) *Bangle-making.*—Bangle-making, a main industry of Mainpuri district, is chiefly centred in Shikohabad, Ormara Kirar, Naushera, Jasrana and Karhal where it finds employment for 700 men in 13 factories.

Two kinds of *churis* are made: (1) *sada* (plain), (2) *reshmi* (silken, i.e. very fine and glossy). There are six factories in the district which manufacture *sada churis* worth about Rs. 1,08,000 annually.

Jasrana once had 18 factories but all except one have closed. Shikohabad is a railway station and transport from there is easy and cheap. Jasrana is 13 miles from Shikohabad railway station.

The factory of Budhu and Kasim of Shikohabad is on a big scale with 11 *dukans* (crucibles) and 23 workmen, working 10 hours and manufacturing 70,000 bangles a day. Block glass is either purchased locally or imported from Ferozabad at an average cost of Rs. 5-8 a maund. A thousand bangles are made out of every 2½ seers of glass; a maund produces 16,000 bangles. Workmen are paid at the rate of 6,000 bangles per rupee. Sixteen thousand bangles can be produced at a cost of Rs. 13-8, thus:—

				Rs. a.
Katch (glass)	...	...	...	5 8
Labour	...	...	...	2 8
Colouring material, etc.		...	...	1 8
Fuel	...	...	...	3 0
Supervision	...	...	...	1 0

		Total	...	13 8

Bangles are exported to Lucknow, Cawnpore, Fyzabad, Unao, and the Punjab at an average rate of Rs. 1-2 per thousand or Rs. 18 per 16,000. Profits Rs. 4-8.

One workman can make 2,000 to 3,500 *churis* in a day.

At the rate of 6,000 for a rupee, he earns annas 8 to 10 a day.

The process of bangle-making has been described in detail in Dobb's monograph on glass and pottery.

Biyoparis (shopkeepers or their agents) come to the manufacturers to buy *churis*. Sometimes orders are sent by post also.

Reshmi.—*Reshmi* bangles are made in Ormora Kirar in Shikohabad tahsil in seven factories whose names are mentioned in the directory.

The most important factory is that of Abdul Hamid. Though started last year, it manufactures one lakh *churis* every day and has 40 workmen.

Glass is purchased from Bohre Brij Lal of Shikohabad at the abovementioned rates.

Reshmi churis are made by a new process.

Process.—Three seers of glass are mixed with two tolas of borax and melted. The whole mass is well kneaded and coated with molten glass in the furnace. It is then taken out of the furnace, cooled, made smooth, and heated again. This gives brilliance to the glass. The molten glass is then put on rollers and allowed to cool. The cooled cylinder of glass is called a jora. The joras are cut into *churis* by means of stones. The *churis* are then made circular by heating them on a lamp. The ends are then joined and the *churis* are polished with lime.

Rollers are imported from Agra at a cost of Rs. 50 each. *Reshmi churis* sell for Rs. 3 and *bachkana* (child's) for Rs. 2-8 per thousand.

Remarks.—The manufacturers are not able to make bangles of a red colour and desire that experiments may be undertaken and the process of making red glass given to them.

A *pucca* road from Ormora Kirar to Shikohabad or a railway station at Nau Shera is also badly needed. This distance is three miles only.

4. — Hardware.

Cutlery.—The district has about half a dozen shops in Mainpuri, Shikohabad, and Jasrana where razors, scissors, knives and other articles are made. Kelai in Jasrana tahsil is famous for making nice *pucca sarautas* (nut-crackers), knives and scissors. It has two shops with five workmen.

The blades are made of iron which is imported from Etah. Mostly old and unserviceable railway iron is bought for the purpose. The rest of the articles is made of brass, also imported from Etah, or bought of hawkers selling unserviceable utensils.

		Prices.		
		Rs.	a.	p.
	<i>Sarauts</i> , medium size ...	0	10	0 each,
	Scissors, small ...	0	5	0 ,,
	big ...	1	4	0 ,,
	Knives, small ...	0	2	6 ,,
	big ...	0	6	0 ,,
				to
		0	7	0 ,,

Articles of any size can be made to order. Articles are exported mostly to Agra and Etah districts by people visiting the places or through friends and relatives living in Mainpuri district. The export is not regular.

One man can make two big *sarauts* or four scissors or five knives in a day and earn 14 annas or so. The cost of manufacture of a *sarauta*, which would sell for 10 annas, is 3 annas, thus:—

		Rs.	a.	p.
Brass	...	0	2	6
Iron	...	0	0	6
Total		0	3	0

5.—Leather.

A market is held in Alipur-Khera of Bhongaon tahsil on every Tuesday where hides and skins are sold in large numbers. The district has other markets also for the sale of these articles but none so important as Alipur-Khera, where it is estimated that sales worth Rs. 4,000 take place on every market day during the winter season, worth Rs. 800 during summer and worth Rs. 200 to Rs. 300 during rains.

A hide costs Rs. 5 and a skin Re. 1 or annas 12.

The trade has declined on the opening of other similar markets in Farrukhabad district. The market is visited by traders of Mainpuri, Etah, Etawah, and Farrukhabad districts.

Shoe-making.—Mainpuri, Kuraoli, Kiratpur, Bhongaon, Alipur-Khera, Nabiganj, Serai Shaikh, Bewar, and Kusmora have a large population of Chamars. Mainpuri imports leather worth

Rs. 80,000 from Cawnpore, besides consuming its own hides. Salem Shahi, Amrit Sari, Khurd-nok, and Bandedar shoes of Indian pattern are made.

Shoes worth Rs. 50,000 are exported to Cawnpore, Fatehpur-Haswa, Fatrukhabad, Etawah, Nagpur, Kalpi, and Hyderabad. *Kamdar* shoes (flowered in tinsel) are not made now—the Chamars who used to make them died during the last influenza epidemic. Leather for a pair of shoes costs Re. 1. The pair would sell for Rs. 2. A shoemaker thus earns Re. 1 a day, as he can make a pair in a day. Family members help a shoemaker, but no outside labour is employed.

6.—Miscellaneous.

(1) *Ghi*.

Jasrana and Shikohabad tahsils of Mainpuri district export *ghes* in large quantities to Delhi, Calcutta, and Karachi. Jasrana trade has declined, but still *ghi* worth Rs. 80,000 is collected from the neighbouring villages for export. Sirsaganji in Shikohabad tahsil exports 12,000 maunds annually to Calcutta. Shikohabad too has several dealers who collect *ghi* at Ghiror and Shikohabad from the neighbouring villages of Mainpuri and Etah districts. *ghi* trade is going down in Shikohabad also.

(2) *Industrial Technical Schools.*

(i) Kr. Lal Singh Mansingh Kshattrya Institution, Mainpuri, imparts instruction in shorthand, typewriting, Ayurved (medicine), *Tarkashi* (inlaying wood with metal wire), Sanskrit, English, Mathematics, music, cane-work, and weaving. Hindus are admitted; Kshattryas preferred. Fees charged are: Rs. 2 shorthand, Rs. 8 typewriting, Rs. 2 music. Further information can be had from Motisingh Lalsingh, P. O. no. 2, Bombay, or the Manager of the Institution, Mainpuri.

(ii) Khem Chand Kishori Lal Weaving school, Shikohabad. Fees: Rs. 16 for a three months' course.

(3) *Jail industries.*

The district jail manufactures—

1. *Curries, dusutis, newar, and towels.*
2. *Munj and rambans mats, and ropes.*

3. Wheat-grinding.

4. Oil-pressing.

5. Tile-making.

Working hours are 6 to 11 a.m. and 1 to 5 p.m.

1. *Durries*.—*Durries* are made in size 7' × 4'. A plain one costs Rs. 7. A man can weave 20 feet, 2½ feet wide, in one day.

Dusuti.—Is made in pieces 35 yards × 28 inches and is sold at 9 annas per yard.

Newar.—Is made to order. A man weaves 30 feet, 2½" wide, in a day of nine hours.

Jharans.—Are also made to order in two sizes—

Small, 2 × 2 feet cost 0-4-6.

Large, 3 × 3 „ „ 0-9-0.

2. *Munj*.—A man pounds 10 to 15 seers *munj*, but twists 300 yards string weighing 3 to 4 srs. This string is coarse and sells at Rs. 6 a maund. Mats 10 feet × 2 feet for prisoners' use are woven from four seers of *munj*. A man weaves a mat in one day. Mats of any dimensions can be made to order. Cost 12 annas per square yard. Ropes and door mats are also made.

Rambans.—One man pounds 20 chhataks *rambans* in a day.

3. *Wheat grinding*.—Fourteen flour mills worked by 14 men grind 15 seers of wheat, or 20 seers of gram per mill per day.

4. *Oil-pressing*.—Three persons, working by turns, crush mustard seed weighing 13½ seers in one day, and produce 4½ seers oil. Jail consumes 2½ seers a day and sells the rest at 1½ seers per rupee. Oil cake is sold at 12 seers a rupee.

Caning of chairs—Charges 12 annas per seat.

5. *Tile-making*—Is recently started: one man makes 200 tiles a day when he is assisted by two others in bringing earth from a neighbouring tank. When 2,000 tiles are made they are baked for two days. Tiles are at present made for jail consumption only. Their price is fixed at Rs. 14 per thousand.

Remarks.—Weaving may be enlarged and carpet or *galin*-making introduced. Experts may be transferred to district jails for training convicts. Nothing is known of the occupations taken up by prisoners on release.

(4) Tobacco.

A special kind of chewing tobacco is made on a large scale in Mainpuri district. The chief centres of this industry in the district are—

- | | |
|--------------|-------------------|
| 1. Mainpuri, | 7. Kishni, |
| 2. Kurauli, | 8. Rampura, |
| 3. Ghiror, | 9. Ajitganj, |
| 4. Bhongaon, | 10. Alipur Khara, |
| 5. Bewar, | 11. Shikohabad, |
| 6. Kusmora, | 12. Parham, |
| 13. Jasrana. | |

Mainpuri town has not less than 100 shops—each shop has three or four workmen.

Materials used in its manufacture are—

- (1) Betel nuts,
- (2) Chewing tobacco,
- (3) Lime,
- (4) Cloves,
- (5) Cardamoms, and
- (6) Camphor.

They are imported from Hathras or Cawnpore. Betel-nuts are first boiled in water and are then cut into very thin slices joined at one end. They are then dried by being stored away for four days in summer and 10 days in winter. The slices are then separated, mixed with lime, tobacco, cloves, and other ingredients and well rubbed to form one homogenous powder. One man slices three to four seers of betel-nuts in a day and is paid at the rate of 4 annas a seer. For very fine slices the wages are Re. 1 per seer. A man can easily earn 12 annas to Re. 1 a day by slicing nuts. Tobacco is sold at Re. 2 a seer. Finer quality at Re. 4 a seer.

About a dozen shops of Raja-ki-bazaria in old Mainpuri manufacture a second quality of this tobacco. It is called Kapuri (camphored) tambaku (tobacco) as camphor is one of the ingredients. Many shopkeepers carry on tobacco-selling as a secondary occupation.

The industry is expanding. The manufacture of Mainpuri town is estimated at Rs. 500 worth a day.

7.—Textile.

Cotton.—Mainpuri is a cotton-producing district. It has three ginning factories. A fourth mill to be called the Ramanand Cotton Ginning mill is in course of erection at Shikohabad and will start work with 30 gins in the cotton season of 1922.

On ginning, kapas yields one-third cotton (ru) and two-third seed (binaula). Work is confined to the winter season from October to February. Kapas is ginned at a charge of 13 annas 5 pies per maund or Rs. 2-8-3 per maund of cotton obtained on ginning. This is pressed at a cost of Rs. 5-8-3 per bale of 4½ maunds. Thus one bale of cotton is ginned and baled at a charge of Rs. 17-8.

Ram Chand Gopi Chand's factory pressed 2,589 bales of cotton in 1921.

The process of hand-ginning, etc., will be found described in detail in Mr. Silberrad's monograph on cotton fabrics.

(2) *Durrie-weaving.*—Three Pathan durrie weavers of Serai Aghat in Etah district have recently migrated to Bhongaon. Generally they weave durries on wages, charging for a bed-size durrie—

Plain 6 annas, coloured 10 annas, and flowered Rs. 1.

These people are prepared to take in apprentices who could help them in preliminary processes.

(3) *Handloom-weaving.*—The district has very little of hand-loom-weaving. Its chief centres are—

Mainpuri tahsil :

Basra Sultanpur	...	20 families.
Taharpur	...	20 "
Nagla Bakhat Mazrai		
Shampur	...	10 out of 8 Julaha.
		1 Dhobi.
		1 Kachhi.

Jaarana tahsil	...	Parham	...	40
Bhongaon	...	Bhongaon	...	30

Bewar	}	A few families in each.
Nabiganj		
Kusmara		
Kishni		
Alipur-Khera		

The Mathur Weaving Works was recently opened in Shikohabad with 18 men, but had to reduce the number to five very soon. Workmen are paid at Rs. 20 per mensem.

But for a few fly-shuttle looms in Shikohabad, throw-shuttle looms are in use throughout the district.

Garha, gazi, dusuti, doria, lengawar, charkhana, dhoti, and angocha are woven. A garha *than* 16 yards \times 9 $\frac{1}{2}$ girah or 21", weighing about 2 seers, sells for Rs. 4. Yarn used in such a *than* would cost about Rs. 2-8. Yarn of 10 $\frac{1}{2}$ and 16 counts is generally used. Its price is Rs. 8 per bundle of 10 lbs. A little handspun yarn is also used, which is obtained at 12 chhataks for a rupee.

There is a weaving school at Shikohabad called the Khem Chand and Kishori Lal Weaving School whose students are given a course of three months in weaving on payment of a fee of Rs. 16. It has only one fly-shuttle loom.

8.—Wood-work.

Tarkashi.—(Inlaying of wood with metal wire) Mainpuri has been famous for a long time for its *tarkashi* work. The chief centres of *tarkashi* are Mainpuri town and Kuraoli, and the chief articles made are kharraon (sandals), toilet cases (singardan) and office boxes. They are made of shisham, which is available locally in abundance. Only best shisham wood is used for this work. Sheets of brass and copper are imported from Cawnpore and Bombay, but old copper vessels are also used. They are cut into thin slices, called wire, by the carpenters themselves. The houses of the carpenters are their factories where they work during the day. In the evenings the articles are brought to the market and either delivered to regular shopkeepers, of which there are about half a dozen in Mainpuri, or retailed to casual purchasers. Each shop is fed by four or five carpenters.

Prices paid by shopkeepers are—

A plain pair of sandals (ordinary) 6 to 7 annas per pair.

An inlaid " " " 10 to 11 annas per pair.

" " " " (superior) 14 to 15 " " "

Qalamdan, big patridar 15 annas each.

" small 8 " each.

The shopkeeper usually retails at a profit of 1 anna per pair of sandals, office boxes at a profit of Re. 1-8 and toilet cases at a profit of annas 8 each.

Prices of office boxes paid by shopkeepers are—

Office box, ordinary, Rs. 5 each.

" " superior, Rs. 6 to Rs. 7 each.

Toilet cases, Rs. 6-8 each.

Bazar prices are—

Sandals, Re. 1 to Rs. 3 a pair.

Qalamdans, annas 9 to Re. 1 each.

Office boxes, Rs. 6-8 to Rs. 7-8 each.

Toilet cases, Rs. 7-8 each.

The articles are exported to Farrukhabad and Etawah but the trade is not regular. Gandhi shoes (sandals with newar bands) are likely to affect the sale of these kharaons. A pair of these costs 4 annas only.

A carpenter hardly earns 12 annas a day when engaged on plain wood-work and 8 annas a day on *tarkashi*. The latter is therefore perceptibly falling down.

For a description of the work, I cannot do better than refer to Mr. Maffey's excellent monograph on wood-carving.

The Government is trying to keep the art alive by engaging a good mistri who works in the Lal Singh Man Singh Kshatriya Charitable Institution and is prepared to take in two students who may have an elementary knowledge of carpentry.

CHAPTER III.

STATISTICS.

I.—Building material.

Statement of quarries in Mainpuri district.

Tahsil.	Situation of quarry.	Approach from	Estimated amount of kankar obtained from quarry.	Area of bed quarry.	Average thickness of bed quarry	Remarks.
Mainpuri tahsil.	Rashemar ..	Mile 10.—Mainpuri-Kuraoli road and mile 940 G. T. road.	100,000	From 1 sq. mile to 2½ sq. miles with an irregular bed of kankar.	2 ft.	
	Rajpura ..	Mile 7.—Mainpuri-Kuraoli road.	150,000		2 "	
	Ruppura ..	Mile 4.—Mainpuri-Kuraoli road.	200,000		1½ "	
	Kelkanagla ..	Mile 2	100,000		..	
	Kadherabar ..	Mile 4.—Mainpuri-Etawah road.	90,000		2 ft.	
	Bank ..	Mile 6.—Mainpuri-Etawah road.	75,000		1½ "	
	Ohulena ..	Mile 50.—Agra-Mainpuri road.	60,000		..	
	Kerukhara ..	Mile 1.—Kosma rail feeder road	..		1½ ft.	
Musafabad.	Seraipar ..	Mile 16.—Etah-Shikohabad road.	60,000		1½ "	
	Bhitwara ..	Mile 4.—Jasrana-Musafabad road and mile 14 Shikohabad road.	50,000		2 "	
	Naganathi ..	Mile 9.—Ghitor-Jasrana road.	100,000		1½ "	
	Madhu ..	Mile 5.—Ghitor-Jasrana road.	100,000		1½ "	
	Palla ..	Mile 7.—Ghitor-Jasrana road.	90,000		2 "	
	Dinank ..	Mile 6.—Etawah-Shikohabad road.	75,000		2 "	

Statement of quarries in Mainpuri district.—(conold.).

Tahsil.	Situation of quarry.	Approach from	Estimated amount of kankar obtained from quarry.	Area of bed quarry.	Average thickness of bed quarry.	Remarks.
Shikohabad.	Merghat ..	Mile 86.—Agra-Mainpuri road.	c. ft. 75,000	From 1 sq. mile to 2½ sq. miles with an irregular bed of kankar.	1½ ft.	
	Balai ..	Mile 87.—Agra-Mainpuri road.	100,000		1½ "	
	Charai ..	Mile 8.—Shikohabad Bateshar ferry.	100,000		1½ "	
	Fatabpur ..	Mile 6.—Shikohabad Bateshwar ferry.	120,000		1½ "	
	Dandi-ka-Nagla	Mile 5.—Shikohabad Etawah road. Mile 43.—Agra-Mainpuri road.	80,000		2 "	
	Bada-ka-Nagla	Mile 84.—Agra-Mainpuri.	100,000		2 "	
	Kaurara ..	Mile 3.—Kaurara railway feeder road.	100,000		2 "	
	Gondai ..	Mile 16.—Shikohabad-Etawah road.	60,000		2 "	
Karhal.	Asrohi ..	Mile 17.—Mainpuri-Etawah road.	100,000		2 "	
	Bansak ..	Mile 13.—Mainpuri-Etawah road.	90,000		1½ "	
	Ohanderpura ..	Mile 231. G. T. road	100,000		2½ "	
Bhongaon.	Miranpura ..	Mile 228.— " ..	100,000		2½ "	
	Bhikapur ..	Mile 242.— " ..	100,000		1 "	
	Chelaunsa ..	Mile 27.—Etawah-Farrukhabad road.	60,000		1½ "	
	Daudpur ..	Mile 32. Etawah-Farrukhabad road.	150,000		1½ "	
	Madhupur ..	Mile 86.—Etawah-Farrukhabad road.	100,000	1½ "		
Frangi ..	Mile 89.—Etawah-Farrukhabad road.	100,000	2 "			

2.—Chemicals.

(i) Crude saltpetre :—

Raw material.—Loni (nitrous earth).

Exports.—2,312 maunds of crude saltpetre.

Place of consignment.—Farrukhabad.

Manufacture.—Cottage industry.

Wages.—Average Rs. 12 to Rs. 15 per month.

Number of hands employed.—About 3,000.

(ii) Refined saltpetre :—

Raw material.—Unrefined saltpetre.

Exports.—1,000 maunds of refined saltpetre.

Places of consignment.—Calcutta and Farrukhabad.

Manufacture.—Cottage basis.

Wages.—Rs. 15 per month.

Number of hands employed.—8.

Output.—1,000 maunds refined saltpetre and 500 maunds salt.

3.—Food-grains and other edibles.

Ghi and grain :—

Exports.—*Ghi* about 20,000 maunds.

Grain about 80,000 maunds.

Places of consignment.—Calcutta, Karachi, Punjab, and Manauri (Allahabad).

Number of hands employed.—50 persons.

4.—Glass.

(i) Bangle-making :—

Raw-material.—Crude glass.

Exports.—About Rs. 2,00,000 worth.

Places of consignment.—Lucknow, Cawnpore, Fyzabad, Unao, and Punjab.

Manufacture.—Factory system.

Wages.—Average 10 annas a day.

Number of hands employed.—700.

Output.—Between 3,000 and 4,000 bangles a day.

(ii) The Paliwal Glass Works, Shikohabad :—

Raw material.—Sand, sodium and calcium carbonate.

Import places of origin.—Loksi, Bargarh, Calcutta.

Export.—30,000 maunds.

Places of consignment.—Sabaranpur, Bulandshahr, Arrah, and Calcutta.

Manufacture.—Factory system.

Wages.—Average Rs. 20 per mensem.

Number of hands employed.—30.

Outturn.—80 maunds a day.

5.—Hardware.

Cutlery.—

Raw material.—Iron, brass, and wood.

Manufacture.—Cottage basis.

Wages.—Average 14 annas.

Number of hands employed.—About two dozen.

Outturn.—Five knives a day.

6.—Leather.

Hides and leather:—

Raw material.—Hides.

Import.—Rs. 80,000 worth (hides).

Export.—Rs. 50,000 worth (shoes).

Places of consignment.—Cawnpore, Fatehpur Haswa, Farukhabad, Etawah, Nagpur, Kalpi, and Hyderabad.

Manufacture.—Cottage basis.

Wages.—Re. 1 a day.

Number of hands employed.—About 800.

Outturn.—One pair a day.

7.—Tobacco.

Raw material.—Betel-nut, spices, and camphor, etc.

Export.—Very very irregular.

Manufacture.—Cottage basis.

Wages.—Average 12 annas to Re. 1 a day.

Number of hands employed.—About Rs. 1,500.

Outturn.—Average two seers a day.

8.—Textiles.

(i) Cotton :

Raw material.—Kapas.

Export.—14,063 maunds (cotton).

Places of consignment.—Bombay, Calcutta, Hathras.

Manufacture.—Ginning and pressing factories.

Wages.—13 annas 5 pies per maund of *kapas* for ginning and Rs. 5-8-3 per bale of 4½ maunds for pressing.

Number of hands employed.—219.

(ii) Ginning factories :—

Factory.	Number of gins.	Number of presses.	Boilers.	Labourers.	Consumption of <i>kapas</i> in maunds.	Remarks.
1. Ramchand Gopi Chand Ginning and Pressing Factory.	64	1	2	135 including 12 skilled.	14,250	Does some business on its own account also.
2. The Coronation Ginning Factory owned by Thakur Laiq Singh of Labhous and leased to Babu Bhola Nath of Shikohabad.	...	...	...	50; 22 men 28 women.	15,000	
3. The New Vaishya Paliwal Ginning Factory. Manager Babu Ram Santi.	...	...	...	34; 14 men 20 women.	12,939	

(ii). Handloom-weaving—

Raw material.—Yarn.

Manufacture.—Cottage basis.

Wages.—Average 12 annas a day.

Number of hands employed.—About 1,500.

Output.—One man weaves eight yards a day of coarse cloth.

9.--Wood-work.

Wood-work and *Tarkashi* work.

Raw material.—Wood, iron, and brass.

Export.—Rs. 450.

Places of consignment.—Farrukhabad and Etawah.

Manufacture.—Cottage basis.

Wages.—From 12 annas to Re. 1 a day.

Number of hands employed.—About 50.

CHAPTER IV.

DIRECTORY.

1.--List of factories which manufacture sada (plain) churis.

1. Buddhu and Kashim, Shikohabad,
2. Abid and Ibrahim "
3. Moosa "
4. Rahim "
5. Ibrahim, Nau Shera "
6. Sheikh Kallu, Jaserana.

2.--List of factories manufacturing reshmi bangles.

1. Abdul Hamid, Ormora Kirar (Shikohabad).
2. Karim Bux, " "
3. Aju Sadat " "
4. Abdur Rahim " "
5. Nizam Uddin " "
6. Qamr-uddin " "
7. Mohammad Siddique, " "

3.—List of ginning factories.

1. Gopiram and Ramchand Ginning and Pressing Factory, Shikohabad
2. The Coronation Ginning Factory, Sirsaganj.
3. The new Vaishya Paliwal Ginning Factory, Sirsaganj.

4 —List of Technical Schools.

1. Kunwar Lal Singh Man Singh Kshattrya Institution Mainpuri.

2. Khem Chaud Kishori Lal Weaving School, Shikohabad.

5. List of Co-operative Societies of Mainpuri district.

- | | |
|----------------|------------------------|
| 1. Dewamai. | 6 Bahadurpur. |
| 2. Kapoorpur. | 7. Saraiya. |
| 3. Jhudadhar. | 8. Esauli. |
| 4. Madhao. | 9. Lodhipura. |
| 5. Shikohabad. | 10. Vegetable vendors. |

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|-------------------------|---------------------------|
| 11. RATHERA. | 48. PIRTHIPUR. |
| 12. RUPPUR. | 49. HURRAJPUR. |
| 13. JAWAPUR. | 50. BAIRAGPUR. |
| 14. DARBAB. | 51. KHIZARPUR. |
| 15. BARAGAON. | 52. HARCHANDPUR. |
| 16. KALHORE. | 53. JATPURA. |
| 17. DANNAHAR. | 54. BASAIT. |
| 18. MOHAMMADPUR GHIROR. | 55. MAHELISHUMSHAIR GUNJ. |
| 19. LUGGAWAN. | 56. ANGADPUR. |
| 20. GODHNA. | 57. RAJPUR BALAI. |
| 21. NAGHLA BAGH. | 58. NIHALPUR. |
| 22. NAGLA BHAO. | 59. ARMARAJUT. |
| 23. TAHARPUR. | 60. MOHANIPUR. |
| 24. SAKATPUR. | 61. BAHORANPUR. |
| 25. KHERY. | 62. NAGLA BAZDAR. |
| 26. BHONGAON. | 63. NAGLA JAWAHAR. |
| 27. RAM NAGAR. | 64. HIMMATPUR DHARAO. |
| 28. ROI SINORA. | 65. KUTRA MIRAN. |
| 29. ODIMPUR NARAINI. | 66. CHARAEY. |
| 30. MIRAPUR SEJAPUR. | 67. KOTAKPURA BARIARMAO. |
| 31. CHACHA. | 68. MAHABATPUR. |
| 32. NAGLA GARAIRIA. | 69. MAHRA BAD. |
| 33. PARTABPUR. | 70. NAGLA SITA RAM. |
| 34. BAQIPUR. | 71. GULRAEY. |
| 35. BINODPUR. | 72. NAGLA UMRAI. |
| 36. SULTANGANJ. | 73. RAAMPUR. |
| 37. NAKA. | 74. GARHI. |
| 38. DOHLAPUR KHERIA. | 75. SAREY. |
| 39. ALI KHERA. | 76. SONAEY. |
| 40. SAMAN. | 77. FARIDA. |
| 41. KUTRA. | 78. AZAMPUR SILOTA. |
| 42. HINDOOPUR. | 79. EKA. |
| 43. BARHAR. | 80. MOHANPUR. |
| 44. BUMNIPUR. | 81. NAGLA SONTA. |
| 45. RAICHAND. | 82. NAGLA GIVINDPUR. |
| 46. KISHNI. | 83. NAGLA JERA. |
| 47. CHANDERPUR. | 84. SUJRAI. |

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- | | |
|--------------------------------|-------------------|
| 85. Nauamao. | 104. Dhibaia. |
| 86. Hafizpur. | 105. Dangao. |
| 87. Asogpuri. | 106. Shariefpur. |
| 88. Fatehjungpur. | 107. Kalianpur. |
| 89. Rustampur. | 108. Ganaishpora. |
| 90. Gangapur Mohammad-
pur. | 109. Nagla Jola. |
| 91. Basabtpur. | 110. Nagla Hito. |
| 92. Lakhera. | 111. Thorwa. |
| 93. Nagla Jungli. | 112. Rumpora. |
| 94. Tilokpura. | 113. Gauri. |
| 95. Jakhaoa. | 114. Asogpur, ii. |
| 96. Sadatpur. | 115. Deekali. |
| 97. Sarailatif. | 116. Bechia. |
| 98. Dabipagar. | 117. Chatari. |
| 99. Makbolpur. | 118. Belon. |
| 100. Bikapur. | 119. Chandpora. |
| 101. Saidpur Bhagoti. | 120. Sarhopur. |
| 102. Rihpura. | 121. Arjunpur. |
| 103. Bishanpura | 122. Basdeomai. |
| | 123. Jasana. |

Report of the
INDUSTRIAL SURVEY
of the United Provinces

Meerut District

By

M ZIA-UR-RUB, B.Sc., LL.B.



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FOREWORD.

MERRUT is the headquarters of one of the richest divisions of the province. Its climate and soil are both favourable to the cultivation of rich crops like sugarcane, cotton, wheat and potato, which are grown in the district on an extensive scale. It is traversed with a network of canals and good irrigation facilities have helped to make agriculture attractive. Its close proximity to and good railway and road connections with Delhi have acted against the springing up of organized industries in the district. Even industries ancillary to agriculture are almost non-existent.

Raw material for them is available in the district and there is a demand for the finished product.

The Divisional Superintendent has made the following suggestions about the possibilities of organizing industries in the district :—

- (1) A Spinning Mill.
- (2) A Tannery. There is increasing demand for good tanned leather in the district.
- (3) A Bone-meal factory.
- (4) A Glue factory.
- (5) A Glass factory for making gangajalis.
- (6) A power driven hosiery mill.

The following suggestions have been made for the improvement of the existing industries :—

- (1) A Co-operative Society amongst handloom weavers and weavers of newar, durrie and blankets, and makers of rope, cricket balls, etc., for the purchase of wool, leather yarn, sale of goods and for introduction of better appliances and methods.
- (2) Small capitalists to come and organize the making of mats, baskets, moondbas, the manufacture of locks (particularly locks for trunks) and fittings for suit-cases and hand-bags, etc.

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- (3) Existing oil-engines to take up the work of *dal* making and running emery wheels for grinding scissors in off season.
- (4) Greater irrigation facilities—
- (i) by opening—
 - (a) a branch from Nala distributary at Sailana to Khwaja Nagla,
 - (b) a Kali Nadi canal,
 - (c) a branch from Bhola Jhal to Kharkhauda, Parichi, Nalpur, Chattri, Kol to discharge in the Kali Nadi at Atraura..
 - (ii) by removal of complaints about insufficient water supply in time ;
 - (iii) by prevention of undue consumption of water in the district of Muzaffarnagar.
- (5) (i) Metalling of the roads from Lawar to Meerut, Nirpura to Meerut and from Lawar to the principal Meerut-Roorkee road.
- (ii) Bahadurgarh to Garhmukteshar-Siyana-Bulandshahr road.
- (6) Construction of a railway between Garhmukteshwar and Ailum passing through Shahjahanpur, Kithur, Parichhatgarh, Phalauda, Lawar, Sardhana, Barnawa, Nirpura.
- (7) Steps to be taken—
- (i) To teach Kamaliyas the processes of—
 - (a) milling and
 - (b) dyeing.
 - (ii) To substitute other oils for cocoanut oil in soap making by cold process; or if no other substitute can be found, to make cocoanut oil in the province.
 - (iii) To substitute dyes for foreign ones in soap making.
 - (iv) To substitute country perfumes for foreign ones in soap making.
 - (v) To manufacture caustic soda locally.
 - (vi) To introduce machinery in the manufacture of cricket and hockey balls.
 - (vii) To find out a cheap process of enamelling clay-ware, especially deep red and white.

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- (8) Some means to be devised of making proper estimates of value of goods on which an *ad valorem* duty is charged by the municipality.
 - (9) Deputation of a peripatetic instructor to teach improved methods of weaving blankets and to introduce fly shuttle looms of greater width.
 - (10) The railway freight should be reduced on—
 - (i) Caustic soda and cocoanut oil,
 - (ii) Pottery.
 - (11) Nickel plating works to be opened in Meerut.
 - (12) The proprietor of lamp making factory to (1) substitute brass for galvanized sheets ; (2) use polished reflectors with wall lamps and to use Delhi burners.
 - (13) Prospecting to be done for finding iron pyrites and country sulphur for the manufacture of sulphuric acid.
 - (14) Embroidery on shirts, saris, handkerchiefs, table cloths to be introduced in place of the declining industry of embroidered caps.

Some of the above are already engaging the attention of the various departments to which they relate, e.g., the question of providing better railway and road communications is already before the Board of Communications and many others like 5, 6, 7 and 8 will, it is hoped, be taken up by the connected departments. Co-operative societies for the purchase of yarn, wool or leather are necessary. They will bring the raw material cheap to the manufacturer and help in the introduction of improved appliances and processes. They should certainly be organized. But with the exception of the cricket balls which are mostly of one shape and design, I have grave doubts if the societies can successfully take up the sale of finished products until and unless the goods are standardized. In the present condition of the industries it will be very difficult to sort and group goods of different qualities as no two articles will be found to be similar in shape, make or design. The societies will therefore have to maintain a large staff of expert sorters.

If anything can be concluded from the numerous enquiries that come to us daily it is apparent that many small capitalists are only awaiting an opportunity to start small factories

connected with industries not requiring large capital. The manufacture of mats, baskets, moonchas, locks for trunks and fittings for suit-cases, hand-bags, etc., can well be organized by them. The department will only be too glad to render any help it can.

Similarly the owners of factories like those for ginning and pressing of cotton etc., which work only in particular seasons will be provided with work by taking up the business of *dal* making or running emery wheels for grinding scissors for the remaining part of the year. A nickel plating plant is a great necessity in Meerut to help the scissors industry.

Sulphur is the cheapest material yet known for the manufacture of sulphuric acid, and it has yet to be seen whether any attempt to manufacture the acid from iron pyrites will be a commercial success.

Separate monographs are under compilation by the department on kankar and reh, and information regarding these will be found there. The area under reh is increasing particularly in the khadir areas of the Ganges, the Jumna and Hindan rivers, and the manufacture of caustic soda from it will benefit the soap makers very much.

The manufacture of saltpetre and glass bangles will be dealt with in the second report.

Tobacco is grown in the district in 3,000 acres, but the only industrial use made of it is the manufacture of *hugga* smoking tobacco. Enquiries were made about the manufacture of cigars when I was in Meerut. The results of experiments in Rungpur factory are encouraging and the cultivation of acclimatized foreign tobacco should be encouraged by the Agricultural department.

Statistics about dairy produce, orchards and groves would have been interesting. Besides mangoes, Meerut is known for many kinds of other fruits and use should be made of many of them in making preserves, jams, chutnies, if not in canning them for export.

A little aloe fibre is already obtainable in the district. Its plantation can easily be extended alongside the canal banks or road paties. Good fibre which would satisfy trade requirements can easily find a market, and the rest can be utilized in the manufacture of ropes and mats, etc.

The chief industries of the district are handloom weaving, blanket making, soap making, leather works, scissors making,

glazed pottery and a little gota work. Handloom weaving industry is already engaging the attention of the Government and has recently been the subject of a separate enquiry.

Meerut blankets were in demand, mostly, because they were pure wool and cheap. Their finish is decidedly inferior to rugs made in Lalimaji and other woollen mills, and the prices have gone up without much improvement in the quality. Wider looms and raising will improve them. Hand machines for carding and spinning wool may remove this defect to a certain extent and be useful in cheapening production. The use of coloured yarn will introduce variety in designs. As the weaving of checks has begun in the district the use of coloured yarn is all the more necessary.

Machinery can with advantage be introduced for pressing, punching and stamping leather, for pressing heels and soles and for the stitching of inferior kinds of shoes. Lasts ought to be made in the country. Iron lasts are made in Cawnpore for many shoe factories; wooden lasts are also made, but the wood is not of so good a quality as that of the foreign lasts. Experiments ought to be made in finding out a proper kind of wood for last making. This is already engaging the department's attention.

Scissors making requires (1) nickel plating, of which mention has been made above, and (2) a better organization which would secure capital for the industry. As wages are mostly paid by piece work it should be possible to organize factories for their manufacture on a good scale.

The Divisional Superintendent has suggested that either some indigenous substitute be found for the cocoanut oil used in soap making or copra be imported and oil expressed from it in Meerut or somewhere near it. The feasibility of expressing oil from imported copra needs further investigation. It has to be found whether it is possible to import a certain quantity of copra at a less expense than the oil obtainable from that quantity or not. But Dr. Watson, Principal of the Technological Institute, Cawnpore, has conducted experiments to show that a cheap substitute can be found in the province (vide his article in the *Capital* of 15th June, 1922.)

The report is divided into five Chapters. The first is a small introduction giving the general features of the district, lists of ferries, roads, canals, railways, markets and fairs. The

second deals with the description of the various industries of the district and suggestions for their improvement. In the third Chapter is given a summary of the Superintendent's views about the industrial possibilities of the district. Statistics are given in the fourth Chapter, and directly in the fifth. The report ends with a bibliography and a map of the district.

It will be apparent that the report is a compilation and the information contained in it is based on the various Government publications supplemented with personal enquiries made by the Superintendent from the public generally and the man in the business in particular.

The suggestions made in the report are all those from a layman who has had only a few months to study the commercial and industrial conditions of the place and will in most cases have to be supplemented by further enquiries before they can be acted upon. But no pains have been spared to get the information checked by the various experts in the department and special thanks are in this connection due to Mr. S. T. Gadre, the Industrial Chemist to Government.

Thanks are due to the following gentlemen who have rendered willing assistance to the Superintendent in the work which was new to all and about which everybody had grave misgivings :—

- (1) Maulvi Grami (Professor of the Meerut College),
and
- (2) his son
- (3) Ch. Mukhtear Singh, M.L.C.
- (4) Rai Pandit Sita Ram Saheb, M.L.C.

CHAMPA RAM MISRA.

24th October, 1922.

CHAPTER I.

INTRODUCTION.

1.—Features of the district.

Meerut is an agricultural district, having good irrigation facilities on account of the network of canals and a good loamy soil. It has a roaring trade in foodstuffs, particularly wheat. Its industries are few and all centred in the city. Owing to its close proximity to Delhi, it is dependent even for its daily needs on that premier city. There are no mills in Meerut with the exception of a few cotton ginning and pressing factories or a few oil-engine flour mills. The agricultural produce is all exported to Delhi, Bombay, Cawnpore and Karachi.

2.—Ferries.

The following is a list of ferries in the district :—The bridges of boats at (1) Garhmuktesar over the Ganges on the Meerut-Moradabad road, (2) over the Ganges at Puth, (3) over the Jamna at Baghpat, (4) over the Hindan at Baleni, (5) over the Hindan at Baparsi, a mile south of Malahra on the road to Shamli, (6) on the road from Baghpat to Muradnagar, (7) Rauli, (8) Daranagar, (9) Jafarabad, (10) Mukhdumpur, (11) Ghat Wazirabad at Jagatpur over the Jumna in pargana Loni, (12) Barari ferry at Badarpur, (13) Okhliya ferry at Chilla in pargana Loni.

N. B.—Nos. 7, 8, 9 and 10 are under Bijoor District Board, and nos. 10, 11, 12 and 13 are private.

3.—Roads.

I.—PROVINCIAL.

	Name of road.	Length in miles.
1.	Grand Trunk road ...	12
2.	Ghaziabad, Meerut and Roorkee road ...	44
3.	Meerut to Moradabad ...	31

	Name of road.	Length in miles
4.	Railway feeder from 1 to Ghaziabad station	
5.	Railway feeder from 2 to Muradnagar station	
6.	Railway feeder to Begamabad station	
7.	Railway feeder to Mohiuddinpur station	

II.—LOCAL.

1.	Meerut to Bulandshahr	...	...	26
2.	Meerut to Sardhana	...	...	10
3.	Meerut to Baghpat	...	...	28
4.	Meerut to Bijnor	...	...	5
5.	Ghaziabad, Hapur and Garhmuktesar	...	...	42
6.	Ghaziabad to Sihani	...	...	1
7.	Station roads, Meerut	...	...	9
8.	Railway feeder roads	...	...	1
9.	Meerut to Bijnor	...	...	16
10.	Meerut to Shamli	...	...	10
11.	Shahdara, Loni, Baghpat and Baraut	...	...	31
12.	Sardhana to Baraut	...	...	22
13.	Sardhana to Daurala	...	...	5
14.	Mawana to Mawana Khurd	...	...	5
15.	Masuri station feeder			
16.				

4.—Canals.

1.	Eastern Jumna Canal	...	...	42
2.	Ganges Canal	...	...	48
3.	Anupshahr branch of Ganges Canal	...	...	39

5.—Railway Stations.

1. On the O. & R. Railway—Meerut Cantonment, Meerut city, Kharkhauda, Panchi, Hapur, Babugarh, Sikhera, Simbhaoli, Garhmuktesar, Pikhua, Dasna and Ghaziabad.
 2. On the N. W. Railway—Ghaziabad, Guldhar, Muradnagar, Begamabad, Muhiuddinpur, Meerut city, Meerut Cantonment, Sardhana road.
 3. On the E. I. Railway—Hapur, Hafizpur and Ghaziabad.
- On the S. S. L. Railway—Noli, Gotra, Khekra, Baghpat road, Sujra, Baraut, Baoli, Kasimpur Khurd and Ailum.

6.—Markets.

Tahsil.	Pargana.	Name of bazar.	Day or days on which held.	
Meerut	... Meerut	... Qasba Meerut	Monday and Friday.	
		Jani Khurd	... Monday.	
		Siwal Khas	... Thursday.	
		Bahrampur Khas	Tuesday.	
		Rasulpur Rohta	Saturday.	
		Siwal	... Wednesday.	
		Pachpera	... Sunday.	
		Rukanpur	... Sunday.	
		Abdullahpur	... Thursday.	
		Inchauli	... Wednesday.	
		Shampur	... Tuesday.	
		Bhur Baral	... Thursday.	
		Phaphunda	... Sunday.	
		Daurala	... Wednesday.	
		Mataur	... Tuesday.	
		Lawar	... Friday.	
		Mahalka	... Monday.	
Baghpat	... Baghpat	... Aminnagar sarai	Thursday.	
		Khekra	... Friday.	
		Rahtaul	... Tuesday.	
		Kutana	... Sunday.	
Ghaziabad	Chaprauli	... Chaprauli	... Tuesday.	
	... Jalalabad	... Begamabad	... Saturday.	
		Patla	... Wednesday.	
		Niwari	... Sunday.	
		Faridnagar	... Monday.	
		Saidpur	... Tuesday.	
		Muradnagar	... Tuesday.	
		Dasna	... Dasna	... Thursday.
			Dhaulana	... Saturday.
			Dehra	... Saturday.
Pilkhua			... Friday.	
Loni	... Ghaziabad	... Sunday.		
	Farrukhnagar	... Tuesday.		
Sardhana	... Sardhana	... Sardhana	... Friday.	
		Salawa	... Tuesday.	
		Aurangnagar	Saturday.	
		Sardhana.		

Tahsil.	Pargana.	Name of bazar.	Day or days on which held.	
Sardhana ...	Sardhana ... Barnawa ...	Jalalpur Khirwa	Thursday.	
		Doghat	... Friday.	
		Nirpura	... Friday.	
		Binauli	... Tuesday.	
Hapur ...	Hapur ...	Hapur	... Monday.	
		Dahana	... Wednesday.	
		Babugarh Dépôt	Sunday.	
	Sarawa ...	Sarawa	... Thursday.	
		Kharkhanda	... Wednesday.	
		Ajrara	... Tuesday.	
	Garhmuktesar	Garhmuktesar	... Sunday.	
		Bagsar	... Friday.	
	Puth	... Bahadurgarh ...	Bhadsana	... Wednesday.
			Parichhatgarh	... Saturday and Sunday.
Mawana ...	Kithor ...	Aghwanpur	... Friday.	
		Shahjahanpur	... Saturday.	
		Kithor	... Saturday.	
		Lafiana	... Tuesday.	
		Mahalwala	... Wednesday.	
		Hastinapur ...	Sathla	... Wednesday.
			Niloha	... Sunday.
			Gagsauna	... Tuesday.
			Phalanda	... Saturday.
			Mawana	... Thursday and Sunday.
			Nagla Haraira	... Sunday.

7.—Fairs.

Tahsil.	Locality.	Name of fair.	Date.	
Meerut ...	Meerut ...	Nau Chandī	... Chait new moon for 8 days.	
		Ram Lila	... Kuar badi 13.	
		Chhariyan	... Sawan.	
		Rathjatra	... Asarh.	
		Sadar Bazar...	Durga Ashtami	Kuar.
			Gurian	... Sawan.
		Daurala	... Devi	... Chait.
		Phaphunda	... Shah Rukn-ud-din.	Rabi-us-sani.

Tahsil.	Locality.	Name of fair.	Date.
Sardhana ...	Sardhana ...	Burha Babu ...	Chait sudi 2 to 6.
	Salawa ...	Jain fair ...	No fixed date.
	Aurangnagar ...	Jain fair ...	No fixed date.
	Malesara ...	Jain fair ...	No fixed date.
Mawana ...	Hastinapur ...	Bathing fair ...	Kartik.
		Ganga Ashnan	Baisakh.
	Niloha ...	Chhariyan ...	Bhadon.
	Mawana ...	Dasehra ...	Kuar.
	Tikri ...	Kunti Mata ...	Phagun.
	Parichhatgarh	Chhariyan ...	Bhadon.
Baghpat ...	Baghpat ...	Bathing fair ...	Phagun.
	Pura ...	Sheo Chaudas ...	Sawan badi 14th.
		Sheo Chaudas ...	Phagun badi 14th.
	Khekra ...	Burha Babu ...	Bhadon sudi 2 to 7.
		Ghaisa Sant ...	Phagun.
		Ghaisa Sant ...	Asarh.
		Sarangi Mela ...	Aghan.
	Kutana ...	Bathing fair ...	Phagun.
Ghaziabad...	Sikri Khurd...	Kalika Debi ...	Chait badi 7 to 10.
	Behta Hajipur	Urs Shah Abdul-	Rabi-us-sani.
		la.	
	Samana ...	Sati Puja ...	Baisakh sudi 5.
	Dasna ...	Debi Puja ...	Chait and Kuar.
		Urs Makhdum	Muharram.
		Shah.	
Hapur ...	Garhmuktesar	Kartik bathing	Kartik Purn-
		fair.	masbi.
		Dasehra fair ...	Jeth.
		Pikhauti fair ...	Baisakh.
	Hapur ...	Dasehra ...	Kuar.
		Salonon ...	Sawan.
		Sheoratri ...	Sawan.
	Sibsari ...	Basant Panchmi	Magh.
	Ajrara ...	Urs Hazrat	Asarh.
		Shame-ud-din.	

CHAPTER II.

Description of, and suggestions for the improvement of, the various district industries.

I.—Art Industries.

(a) *Embroidery*.—Embroidery in silk and wire and tinsel, particularly that on caps, gave employment to 400 men and 6,000 women in Meerut before the war. It is considered as an accomplishment in high class Hindu and Muhammadan ladies. Many pardanashin ladies, especially of Khattri and Kayasth families; still do the work for the market. Meerut exported Rs. 20,000 worth of caps chiefly to Bengal. The industry has declined of late owing to :—

- (1) a change in fashion and tastes,
- (2) high prices of foodstuffs and consignment, general trade depression,
- (3) non-co-operation movement which has given a bias in favour of so-called Gandhi or Swarajya caps,
- (4) rise in the price of the cap due to a general rise in the prices of raw material.

The above have dealt a great blow to this industry. Large stocks have accumulated causing great loss to the dealers. Hundreds of workmen have been thrown out of employment and have migrated to other places in search of work. The dealers have to content themselves with the loss of the advance given to the workers. The following are some of the statistics connected with the industry :—

		<i>Before War.</i>	<i>After War.</i>
Imports of Salma	Kala-	Rs. 12,000 per	Rs. 5,000 per
battu Sitara	Silk	month.	month.
thread, etc.			
No. of factories	...	70	25 in tottering state.

Workers—		<i>Before War.</i>		<i>After War.</i>	
Men	...	400		125	partly engaged.
Women	...	6,000		1,000	partly engaged.
Outturn—		<i>Before War.</i>		<i>After War.</i>	
		Rs.	a. p.	Rs.	a. p.
Selling price of a cap	...	2	0 0	5	0 0
Cost price of a cap	...	1	8 0	6	0 0
Profit	...	0	8 0	1	0 0 loss.

About 25 dealers are engaged in this work. Articles other than caps are usually made to order. Until and unless there is a change in the taste of the people in favour of the Meerut caps, there appears to be very little hope for the revival of the industry. The workmen have to find other avenues, and I would suggest that they take to working in embroidery on saris, shirts, pyjamas, handkerchiefs. There is still a demand for such articles.

Muhammad Omer of Chamar Gate, Meerut City, does embroidery work on weaving apparel to order and charges 10 annas to 12 annas a tola of silk or kalabattu used. A commission of Re. 1-9-0 per cent. is given to wholesale merchants.

(b) *Gold and silver ornaments.*—Gold and silver ornaments are made to order by sonars who numbered 4,681 in the census of 1911. No definite figures for the import of gold and silver could be obtained. But some nice "diamond cut" ornaments are made, though they are not so good as those of Delhi.

II.—Building materials.

(a) *Lime.*—Meerut has 35 lime factories with 30 kilns and there is a big factory worked by steam power at Mohiuddinpur. Kankar is ordinarily obtained locally, though some is imported from Bulandshahr district also. Mohiuddin Factory turns out 400 maunds lime and the rest 500 maunds daily.

(b) *Brick kilns.*—Eighteen brick kilns in Meerut turn out about 144,000 bricks daily. They are all worked with chimneys.

(c) *Stone work.*—About 25 persons are employed with stone work for building purposes. The number of dealers is 4, the daily wages of workers are Re. 0-12-0 to Re. 1-8-0.

III.—Chemicals.

(a) *Acids.*—There is a factory at Ghaziabad belonging to a Benares gentleman—Mr. Ajudhiya Prasad—which manufactures 300 to 350 jars of sulphuric acid by the Chamber process. It also manufactures 50 to 60 jars of nitric acid and 25 to 30 of hydrochloric acid monthly. The products are sold at Delhi through an agent Haji Kallan, Gali Batasani, or exported to Ludhiana, Punjab or Dehra. Sulphur is imported from Calcutta and potassium nitrate (*shora*) from Aligarh. The factory is equipped with 2 steam engines 6 and 8 H. P. It is understood that iron pyrites are found near Naini Tal. Technological investigation may be undertaken to find out whether the pyrites would suffice and be suitable for the manufacture of sulphuric acid.

Wholesale prices are :—

Sulphuric acid	...	...	Rs. 5 a jar.
Nitric acid	...	...	„ 16 „
Hydrochloric acid	...	...	„ 17 „

(b) *Indigo.*—The area under indigo in the district was 1,243 acres in 1921. The cultivation of indigo is decreasing every day in competition with the synthetic material. Three indigo factories worked in 1921 at Athsani, Dotai and Popai in the Hapur tahsil. They all belong to the local zamindars, who export the whole produce to Bombay or Calcutta.

(c) *Adulterated ghi.*—Adulterated *ghi* is made all over the district out of cotton seed, groundnut, and khas-khas (poppy) oils and tallow. The contract for supplying *ghi* to the Army in the Great War has led to the adulteration of *ghi* in almost all the villages of Meerut. The import of *ghi* for local consumption within the Meerut and Hapur cities was 30,326 and 2,761 maunds respectively in 1920-21.

(d) *Dashmool*.—A valuable medicine having a marvellous soothing and invigorating effect and a good blood purifier is collected by Ahairs in the tahsil of Mawana and exported. The following are the ten constituents:—Roots of salparni, prishtparni, kumbar, kateki big, kateki small, gokhru big, gokhru small, bel, arnu and arni. The medicines are distilled and the distillate is administered to the invalids at the time of childbirth.

IV.—Hardware.

(a) *Brass and copper vessels*.—A considerable number of heavy brass and copper vessels such as *thalis* (trays), *katoras* (cups), *batulis* (kettles) and *huqqas* of galvanized sheets are manufactured at and exported from Hapur. The chief places of export are Delhi, the Punjab and Moradabad. All the vessels are of crude, old, heavy type and made by casting process. The annual export amounts to—

15	maunds of brass <i>thalis</i> , <i>katoras</i> and <i>batulis</i> ,
30	ditto galvanized iron <i>huqqas</i> ,
25	ditto phul metal utensils,
120	ditto utensils.

The raw material to the amount of 1,800 maunds a year is imported from Delhi.

(b) *Huqqa kalis*.—Two firms of Naya Bazar, Meerut, employ 15 workers and turn out plain *huqqa kalis* of brass and sometimes of galvanized iron sheets. Monthly output is 50 *kalis* worth Rs. 400. Generally they are made to order, but are sometimes available in the bazars and in fairs. Price Rs. 5 to Rs. 7 a seer. The *kalis* present Narnaul characteristics from where the artisans come.

(c) *Huqqa joints*.—Pilkhua turns out a small amount of brass *huqqa joints* (angles). They are falling out in competition with the copper joints of Lucknow.

(d) *Locks*.—Locks more reliable and durable than Aligarh ones are made at Hapur and Meerut. They can only be opened by keys made for them as no other except the special groove made for a particular key would fit the narrow lock slit with a projecting bit. They have no levers. On my suggestion, a

blacksmith succeeded in making locks with flat keys and moving rings on the Miller-pattern. I have also suggested that small locks for trunks be made, but some difficulty is being experienced in hammering them by hand. Casting appliances should be introduced. About 20 smiths make such locks at the rate of 3 dozen locks a day worth Rs. 360. A good lock costs Re. 1 to Re. 1-4-0.

(e) *Metal fittings for Leather hand-bags and suit-cases.*—A Khairnagar blacksmith has succeeded in making metal fittings and locks for hand-bags and suit-cases. The manufacturer placed the results of his experiments in the Nauchandi Industrial Exhibition and was awarded a silver medal by way of encouragement. The fittings at present are heavy and clumsy. The man needs some financial help for the purchase of raw materials.

(f) *Iron utensils.*—*Tawa* (pans), *karahis* (frying pans) *dols* (buckets), *kolhu* and cart accessories are made in Buraulia, Kishanpur, Baoli, Baraut and Nagla, Sanauli, of Baghpat tahsil. Some 40 men are engaged on this and their output is 250 maunds per month. The annual import of utensils is estimated at 1,000 maunds and that of *kolhus* 2,000 maunds. Some *angithis* and other small vessels and implements like tongs and *kurchhas* are made in Meerut, while the village smith is everywhere busy helping in making or repairing agricultural implements in the villages.

(g) *Scissors.*—After soap, Meerut is famous for its scissors. But for the introduction of a few improved appliances and different patterns, there is no improvement in shape or quality. On the contrary, cheap scissors of wrought iron are being put on the market by some dealers, though their number is very small up to this time. Co-operation is evidently the one way to help the industry. It can buy cheap raw material and cover the cost of production. It can also introduce nickel plating and thus improve the quality of the scissors, but conservatism and trade jealousy prevent the manufacturers from combining.

The process is the same as is described in the Provincial monograph on Steel by Dobbs. Iron is obtained from local dealers who in turn import it from Delhi. It is generally

waste railway stock. Four maunds 15 seers costing Rs. 70 is consumed every day in turning out 70 dozen scissors.

There are 30 factories at Meerut employing 250 workmen and a number of boys. Of these, seventeen are dealers as well as manufacturers. The rest sell their goods to these dealers who supply outside orders.

Meerut turns out 50 to 100 dozens of scissors per day, average 70 dozen. Few mechanical appliances are used. Ordinary wheel bellows polishing tools, hammers, files and grinding wheels are all that will be found in a factory. There is no casting. Piece wages are given. A factory consisting of two workmen can turn out one dozen scissors easily. The cost of making a dozen scissors is estimated below :—

	Rs.	a.	p.
Iron 2½ seers	1	0 0
Cutting into crude parts	1	4 0
Coal	1	0 0
Blower boy	0	2 0
Hammering	0	6 0
Filing	0	12 0
Hole making	0	2 0
Tempering	0	3 0
Grinding and finishing	1	0 0
Polishing etc.,	0	7 6
Nailing	0	4 0
Sharpening	0	12 0
Establishment charges etc.,	...	0	8 0
		<hr/>	
Total cost price	7	14 6
Selling price	9	0 0
		<hr/>	

Messrs. Crown Scissors Factory and Aziz Factory have begun to advertise by publishing printed lists, otherwise advertisements are not resorted to.

Another factory which needs special mention is that of Messrs. Gramie & Co. Their expert mistri was for some time

in the service of Messrs. Johnson & Co. of Aligarh and knows nickel plating also. He can manufacture medical instruments. The proprietor is desirous of floating a company and putting up a nickel plating plant, if financial assistance could be given. An association for import of raw materials and export of scissors will be a great step forward and is badly needed. I would also suggest some flour mills to take up grinding on wheels as a side activity. Any oil-engine of 10 H.P. can take up this work. This will lessen the cost of grinding.

(h) *Trunks*.—Two Punjabi general merchants of Veli Bazar, Meerut, have engaged a few artisans to make trunks for them. Trunks are made in two shapes—

- (1) with flat lids like wooden boxes, and
- (2) with round-edged lids.

Galvanized iron sheets are imported from Delhi at Rs. 17 to Rs. 19 a maund. The trunks are not good and no varnishing is done. Benares locks are used. The following is an estimate of cost of manufacture of one 30" trunk.

		Rs.	a.	p.
1. Cost of raw material (1 sheet 6' x 3')	...	3	3	0
2. Brass lock	...	0	3	0
3. Wages and miscellaneous charges	...	1	8	0
4. Establishment	...	0	3	0
Total	...	5	1	0

This would sell at Re. 0-3-6 per inch, for 30" Rs. 6-9-0.

The trunks are not well shaped at the corners. Better joining and fitting are also required.

(i) *Wall and table lamps*.—S. Kazim Husain, *rais* of mohalla Kotla, Meerut, had a contract for the supply of water casks to the Army during the Great War. At the expiry of the term of his contract he had 500 maunds of galvanized iron sheets left with him, and in order to utilize the same he started making wall and table lamps by importing workmen

from Delhi. Workmen are paid on piece wage system. Cheap Japanese burners are bought at Delhi, so are paints and varnishes. India-made chimneys are supplied with the lamps.

Process.—Galvanized sheets are cut by ordinary metal-cutting scissors into pieces of required size and shape for oil reservoirs and supports. The different parts are then soldered. The lamps are then painted and varnished and are ready for sale. Single and double wick wall lamps (*diwargiris*) are ordinarily made. They are strong, but lack finish. They are painted blue, green and occasionally deep red. The proprietor sent his shop to Saharanpur and Nauchandi exhibitions, but had practically no sale. He is employing agents also, but has as yet not succeeded in clearing his stock which consisted of 1,000 lamps when I visited the factory. A double-wick wall lamp costs :—

			Rs.	a.	p.
Zinc sheet	...	...	0	8	0
Wages	...	...	0	9	0
Varnishing	...	...	0	1	6
Burner	...	...	0	12	0
Chimney	...	...	0	2	6
Establishment charges		...	0	4	0
		Total	1	15	0

This would sell for Rs. 2-6-0.

Table lamps—

			Rs.	a.	p.
1. Larger 1" wick	...	...	1	12	0 each.
2. Smaller 1" "	...	...	1	10	0 "

Wall Lamps—

1. Double wick 1" wick	Re. 1-6-0 to	2	12	0 each.
2. Single wick 1" wick...	...	1	8	0 "
3. " " 3/4" "	...	1	6	0 "

Remarks.—

- (1) Better painting and varnishing are required.
- (2) Thin brass sheets should be substituted for thick galvanized iron sheets.
- (3) Polished reflectors should be used with wall lamps.
- (4) Delhi burners may be substituted for Japanese burners.

Y.—Food Grains.

(a) *Statement showing acreage and production of the principal crops in 1921.*

Name.	Area in acres.		Produce in maunds.		Total produce in maunds.
	Irrigated.	Unirrigated.	Irrigated.	Dry.	
Wheat with gram.	247,802	62,770	3,580,696	630,945	4,211,641
	7,962	7,335			
Barley ...	33,931	26,847	542,896	243,623	786,529
Gram ...	3,436	44,884	31,360	269,304	303,664
Pea ...	55,431	11,777	55,431	58,885	114,316
Oilseeds other than sarson ...	41	2,324	205	9,296	9,501
Sarson	80	598	400	2,392	2,792
Juar chari Sann (hemp) ...	12,950	66,188	...	...	...
Juar (millet)	58	6:7	870 seers.	5,553 srs.	160½
Juar (mixed)	4,339	76,203	599,210	..	599,210
	270	38,970			
Bajra (spiked millet)	602	42,074	...	..	...
Macca (maize) ...	7,744	92,722	213,380		213,880
Cotton ...	11,349	23,213	1,134,900 seers.	1,624,910 seers.	68,995
Cotton mixed with arhar ...	6,475	19,449	647,500	1,361,430	50,223
Sugarcane	101,445	6,105	3,656,700	...	3,656,700

(b) *Imports and exports. (Exact figures of export and imports of grain were not available.)*

The following is a rough estimate :—

(i) *Exports, 1921.*

Name.	Quantity in maunds.	Value in rupees.	Place of consignment.
Wheat ...	15 lacs ...	105 lacs...	Karachi, Lahore, Delhi, Cawnpore, Allahabad, Agra, Bombay, and Calcutta.
Barley ...	2 lacs ..	10 lacs..	Chiefly Karachi.
Cottou ...	73,218	782,000	Bombay and Ahmedabad.
Oil-seeds ..	5,000	30,000	Chiefly Bombay and Hyderabad in Sindh.
Gur and raw-sugar	6 lacs ...	120 lacs..	Punjab, Marwar, and other Rajputana States.
Potatoes ...	2 lacs ...	...	Chiefly Delhi.

(ii) *Imports, 1921.*

Name.	Quantity in maunds.	Value in rupees.	Place of origin.
Gram ...	315,000	18,90,000	Punjab and Cawnpore.
Maoca or maize and juar ...	255,000	12,75,000	Allahabad and other eastern districts, i.e., Cawnpore and Burma.
Rice ...	205,737	2,46,324	Tanda and other eastern districts.

(c) *Local consumption.*—The following is a very rough estimate of the local *consumption* of the chief food crops :—

Wheat	...	...	27 lacs of maunds.
Barley	...	...	6 lacs of maunds.
Cotton (raw)	...	...	33 thousand maunds.
Oilseeds	...	...	7 thousand maunds.
Rice	...	...	3 lacs of maunds.

(d) *Industries.*—Wheat flour grinding—Besides hand grinding there are two big flour mills and 25 small oil-engines mostly in the city of Meerut, three at Hapur, and a few in other places like Baraut, Chhaprauli, Khekra, Ghaziabad, and Sardhana.

Masuri Water Mills supply the largest amount of wheat flour, while fine wheat flour is imported from Delhi. Next to the Masuri Mill the Krishna Flour Mills of Meerut supply flour to the city of Meerut. There is no export.

(ii) *Dal kibbling.*—There are no exports nor imports. *Dal* is prepared by grinding pulse with hand in stone *chakkis*. Women generally do this work, and get eight annas a day. Sometimes the work is also done on piece wage system. Meerut is a big *dépôt* for horses and gram is crushed by power in some smaller flour mills.

(iii) The preparation of *gur* and the refinement of sugar are carried on throughout the district, but as a special committee has lately enquired into and reported on the details connected with this industry, further enquiries were not made into them.

(e) *Difficulties.*—(i) *Transport.*—There is a general complaint that wagons for the transport of grains are not available when required and this results in loss to dealers due to market fluctuations in the period of detention. Potato dealers are bitter in this complaint as potato stocks perished on the railway station waiting for the wagons.

(ii) *Irrigation.*—Here again there is a general complaint of the cultivators that canal water is not available when it is most urgently needed. The cultivators of Baghpat tahsil think that water is largely diverted to the upper division of the Jamna Canal to the detriment of the area irrigated by the lower division. Some cultivators think that they are not given water for a sufficient time to irrigate their lands.

The opening of the following canals was suggested to me :—

- (1) The zamindars of the Chhaprauli pargana applied for a distributary from village Sailana on the Nala distributary of the Eastern Jamna Canal to Khwaja Nagla running through Sailana, Lohara Chandheri, Khwaja Nagla and ending in the drain. This project was surveyed, but work was postponed on account of the war. It should now be taken up.
- (2) Kali Nadi Canal. It is suggested that a canal be constructed from Kali Nadi passing through Nagla Kabulpur, Modha, Ajwara, Shafiabad Loti, and to discharge in the Kali Nadi again. The zamindars and cultivators of Sarawa pargana told me that they will be prepared to pay even double the ordinary rates, if the work were immediately taken up. There is a pressing necessity for this canal.
- (3) Sarawa pargana wants another canal which should run from the Ganges Canal near Bhofa Jhal and passing through Kharkhauda, Panchi, Nalpur, Chattri, Kol, discharge in the Kali Nadi near Atrara.

VI.—Leather.

(a) *Raw material.*—Meerut has a very big cantonment and a regular supply of raw hides and skins is therefore available in the district. In 1921-22, the following number of hides and skins were available from slaughter-houses alone :—

<i>Hides.</i>			
Cows ...	...	...	9,521
Buffaloes ...	...	...	6,729
<i>Skins.</i>			
Sheep ...	...	...	8,441
Goats ...	...	...	5,495

Pilkhua exports 2,600 maunds hides and skins, Lawar 40,000, and Ghaziabad 20,000 to Delhi, Cawnpore, and the Punjab. Similarly the district itself has abundant pure kankar lime. It also abounds in babul trees and therefore there is no dearth of the tanning material. The Ganges

Khadir is full of babul trees. Hides and skins are at present tanned by the old methods by local chamars, but the tanned leather is of very inferior quality and therefore a large quantity of leather is imported into the district from Delhi. Import figures could not unfortunately be obtained. A tannery is an urgent necessity for the district as the demand for leather is daily rising.

(b) *Goods made of leather.*—Harness and saddlery were once made in Meerut on an extensive scale, but the industry has declined very much on account of the competition with Agra and Cawnpore. Efforts are being made to revive the industry, and besides boots, shoes, and cricket balls, which are remnants of the old trade, suit-cases, hand-bags, and other articles have begun to be made. The Leather Working School is doing yeoman service in the revival of the industry. At present 15 factories make boots and shoes with the help of 80 skilled workmen. Cheap shoes of locally tanned leather are exported in large numbers to Moradabad, Amroha, and other neighbouring places. The Meerut Shoe Factory of Khairnagar Gate is turning out good articles.

(c) *Cricket and hockey balls.*—All sorts of cricket and hockey balls are made in Sadar Bazaar, Meerut City. Superior balls are equal in quality to the best imported ones. It is said that a large number of cricket balls of inferior and average quality is exported to foreign countries, chiefly England, and returns from there to countries other than India, embossed with English trade marks. There are 5 factories, employing 50 workmen and producing 50 balls a day. No machinery is employed, but hand appliances for compressing and giving a shape to the balls have lately come into use. Besides these factories, there is a large number of mochis who make cricket balls and sell them to the dealers. Prices vary from Rs. 6 a dozen to Rs. 45 a dozen, but very superior balls cost Rs. 5 and Rs. 5-8 each. Hockey balls cost Rs. 24 to Rs. 4 a dozen.

The balls of Dikshit and Company were used last year in the All India Cricket tournament.

A ball costing 12 annas (yarn 4 annas, leather 3 annas, cork 1 anna, and wages 4 annas) would be sold for Re. 1. The balls are mostly exported to England and other Indian cities through agents. Travelling agents for registering orders are

sent to the various colleges and other institutions. Advertisements are also resorted to.

(d) *Leather buttons* of good shape are made in Khairnagar Gate factory which employs five workmen on it and turns out 100 buttons a day.

(e) *Remarks.*—Co-operative purchase of raw material will do good to the small manufacturer, and an organization is what is badly wanted to improve the industry. To increase the output some sort of machinery should be brought into vogue.

VII.—Miscellaneous.

(a) *Brush manufacture.*—A Brush Factory has recently been started in Sadar Bazaar, Meerut. It is doing good work. The brushes are sold locally. They are somewhat inferior to brushes made by the Cawnpore Factory, but large brooms are quite serviceable. The factory turns out 2 dozen brushes a day. An oval 6" × 3" ordinary brush would cost Re. 0-3-0. Cow and horse hairs are used. The factory is paying about Re. 1 per dozen of brushes manufactured.

(b) *Lac and papiermaché toys.*—Lac and papiermaché toys like horses, cows, parrots, carts, small boxes, &c., are made from cowdung and waste paper and wood by 20 Kaman-gars as a subsidiary work. They are very clumsy in appearance and are coloured red, green, blue, and yellow, and consequently there is very little demand for them, even in the villages.

Process.—The process of manufacture is as follows :—
Methi seed is first ground in stone mills and then thoroughly mixed with the cowdung or the waste paper paste. Cakes are then made of it and pressed in the wood moulds which are made of two symmetrical halves. They are then dried in the sun and taken out by jerking or tapping on the ground. The two pieces are then joined with gum or starch paste. In order to conceal the joint a coating of thick methi and dung paste is given to the toy. The article is then dried and given a coating of glue and powdered brick all over the surface. This removes the coarseness of the surface and the article is then coated with a mixture of glue and chalk. This last mixture is laid five or six times in order to prepare a smooth and good ground for colouring with lac varnish or country dyes. The article is then given the desired colour and is decorated in floral and other designs with locally manufactured lac varnish

and paint. Indigenous dyes are used for colouring. The support or legs of the toys are made of ordinary mango wood coloured with paints. The whole process takes two days and nights.

Wages.—A family can prepare 25 to 50 toys in two days.

The following is the calculation of earning of a Kamangar :—

	Rs.	a.	p.
Cost of the raw material for 25 toys ...	0	4	0
Family labour ...	0	12	0
Total ...	1	0	0

Selling price, Rs. 2 to Rs. 3.

The Kamangars take these articles in local fairs and sell them there.

(c) *Stencil printing.*—An ex-student of Government Dyeing and Printing School at Cawnpore is making experiments in printing cloth by stencil printing method. The whole is at an experimental stage and nothing can be said about it at present, except that some of the prints in green and blue are fine.

VIII.—Oils.

Crushing of oilseeds.—The district produces about 3,000 maunds of sarson and 9,500 maunds other oilseeds. Out of these about 5,000 maunds are exported leaving only 7,500 maunds for local use. The latter are crushed in the district by telis by old primitive methods in wooden *kolhus* consisting of a wooden mortar and basin. About 5 seers is a *ghani* or one charge of a *kolhu* and it takes $2\frac{1}{2}$ hours to press oil out of it. Four such *ghanis* are pressed every day. Oil extracted is 25 to 33 per cent.; women and children help in driving the bullock and extracting the oil. A *kolhu* requires 20 seers of oilseeds in a day.

	Rs.	a.	p.	
20 seers toria cost ...	2	0	0	@ 10 seers a rupee.
Feed of 2 bullocks re- quired to crush it ...	2	0	0	
Total ...	4	0	0	

This will give 5 seers oil and 10 seers cake.

	Rs.	a.	p.	
Price of oil	...	2	3	6 @ 2½ seers a rupee.
Price of cake	...	2	11	0 @ 5 seers 10 chatak a rupee.
Total	...	4	14	6

A family thus earns Re. 0-14-6 in a day.

There are 19,256 *telis*, comprising 3,900 families in the district. Taking 4 *ghanis* to a day and 5 seers to a *ghani*, and 25 working days in a month they require $\frac{4 \times 5 \times 25 \times 8960}{40} = 48,750$ maunds of oilseeds a month, i.e., 292,500 maunds for one year as the work is done for six months in total. It will thus be seen that the district does not produce oilseeds sufficient for the needs of the *telis* in the district. There is no scope for an oil mill in this rich district which does not care to grow oilseeds. There is also some prejudice against machine pressed cake. An oil mill which was once started in Meerut failed on account of these reasons.

IX.—Pottery.

Vessels of glazed pottery are made in 3 places in the district; (1) Bahadurgarh (tahsil Hapur), (2) Kanker Khera (Meerut cantonment), and (3) Kithor (tahsil Mawana). Of these Bahadurgarh is the chief centre of glazed pottery. The red earthen body is covered with a thick white enamel and various designs are then worked on it in blue or green. The article is then covered with metallic and glass enamels whitened with powdered stone.

Guldans, teapots of Brooke Bond pattern, flower-pots in white, yellow, and dark red, tea cups, *rakabis*, *piyalis*, jars, etc., are the articles turned out. There are five families of potters in Bahadurgarh, of whom 4 turn out ordinary domestic utensils. Only one man makes pottery of high order and can make teapots not easily discerned from those of Messrs. Brooke Bond & Co. This man went to the London Exhibition to make glazed *guldans* there. He is now making his own enamels and does not use any imported paints or enamels.

Kankarkhera and Kithor.—Domestic articles like *chilams*, *murtbans* (jars), *handis*, etc., are mostly made in these places. A few flower-pots are also made in Kithor and the potters of

this place use both metallic paints and glass enamels. There are 12 families in Kanker Khera and 5 in Kithor. Royalty for taking earth from the tanks is charged in Kanker Khera and Kithor, but not at Bahadurgarh.

Kanker Khera and Kithor articles, especially *chilams*, are largely exported to the neighbouring cities of Delhi and Moradabad. Bahadurgarh suffers from transport difficulties and only a few articles like *guldans*, &c., are exported by the potters on their account. Their articles are mostly made to order. The road joining Bahadurgarh to the Garhmukteshwar Sayana metalled road is *kachcha*, low-lying, rugged, and rutty.

It becomes simply impassable during the rains. The distance is only 3 miles, but the bad condition of the road causes serious loss to the exporters by a large percentage of breakages. This road should be metalled. Bahadurgarh zamindars will be willing to subscribe towards the cost of metalling it.

Remarks.—The process of making paints, varnishes and enamels should be taught to the potters by local demonstration and arrangement should be made to send out a man from the Art School who should visit each of these places for a few days, as the Bahadurgarh man is not willing to teach his trade secrets to others and take no apprentices. Even he does not know how to produce a bright and shining red. He has requested me to make enquiries and let him know the process of making this paint. The railway fare on pottery should be reduced. They are heavy articles and do not occupy much space. They should also be handled with care at the railway stations.

X.—Soaps.

(i) Meerut has become a great centre for *pavitra* (pure, i.e., free from animal fats) soaps. There are at present 12 soap factories there. With the exception of the East India Company, which is described separately, the rest are run by the proprietor alone with the assistance of 2 or 3 coolies. Soap is generally made by the cold process, which consists in heating the oil in a pan and then gradually adding *sajji* and lime, while the whole is constantly stirred with a rod. A little perfume is then added. Soap is formed and is allowed to cool in frames. When cold it is cut into cakes of required size and

shape. Soap by hot process is made by the East India Company and occasionally by the Norway Soap Co., the Muhammadan Soap Factory of Bazaar Shah Ghisu, and the All India Soap Co. of Sadar Bazaar. On an average Meerut produces Rs. 12,000 worth of soap monthly. The local consumption would be Rs. 2,000 worth and the rest is exported. No paid agents are employed, for the sale of the soaps. The work is done by selling agencies which work on commission. But often the manufacturer himself acts the seller. Commission to agents is given at $12\frac{1}{2}$ per cent. Wholesale buyers are paid $6\frac{1}{2}$ per cent. discount.

(ii) *Raw materials.*—Raw materials used are :—

- (1) *Sajji*,
- (2) Lime,
- (3) Coconut oil,
- (4) Castor oil,
- (5) *Mahua* oil for the inferior varieties.

Perfumes worth Rs. 1,500 and dyes worth Rs. 30 a month are also used in the manufacture of these soaps. These are all foreign. Cardboard boxes are made locally by hand by bookbinders (*daftaris*). Labels are printed locally.

(iii) *Suggestions.*—(1) Coconut oil is imported from outside the province and is very dear on account of the railway freight. Either coconut oil be pressed in the province or some other oil be substituted for coconut oil. *Mahua* oil is used for inferior varieties, as it has a natural colour and possesses an obnoxious smell, and on account of these, does not suit the manufacture of superior soaps by cold process.

(2) Indigenous vegetable dyes should be substituted for foreign ones. The present difficulty is that vegetable dyes do not work well in the presence of caustic soda. Research is necessary.

(3) Perfumes used at present are all imported ones, as country scents are found to be dearer. Steps should be taken to find country substitutes for foreign perfumes.

(4) Caustic soda used is imported material. Caustic soda manufactured at Ahmadabad is only 62 to 72 per cent. pure. Foreign soda is 97 to 99 per cent. pure, and is cheaper. Steps should be taken to manufacture caustic soda in the province.

(5) Efforts should be made with the railway to get caustic soda and coconut oil for Meerut at concession rates.

XI.—Textiles.

(A) COTTON.

(i) *Production.*—The following table gives the quantity of cotton produced in the district :—

Year.	Crop.	Area in acres.		Yield per acre in maunds.		Total produce in maunds.	Remarks.
		Irrigated.	Unirrigated.	Irrigated.	Unirrigated.		
1921	Cotton.	17,824	42,662	2½	1¾	119,218	Out of this Baghpat tahsil has 10,715 acres under cotton and produces 19,044 maunds cotton.
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							

(a) Almost the whole of the cotton produced in Baghpat tahsil is exported to Delhi and ginned there. This is 19,044 maunds.

(b) Similarly, the produce of Mawana and Sardhana tahsils amounting to 25,577 maunds is exported to Muzaffarnagar, Saharanpur and Bulandshahr districts.

(c) Four ginning factories are working in the district, three at Hapur, and the fourth at Meerut. Between them they export 28,597 maunds cotton to Bombay, i.e., the whole of the

cotton ginned and pressed by them. Total export 73,218 maunds. The four factories are—

- (1) Messrs. Jogi Ram Janki Das, Ginning and Pressing Factory, Hapur.
- (2) Messrs. Cheranji Lal Roopchand, Ginning and Pressing Factory, Hapur.
- (3) Mr. Raghbur's Ginning and Pressing Factory, Hapur.
- (4) Mr. Kishori Lal's Lime Mills and Ginning Factory, Meerut.

A statement showing the working of the factories is appended. None of these factories buys cotton on its own account. They all gin it on a commission of Rs. 6-4-6 per bale of 4½ maunds.

Their estimate of working expense per bale is Rs. 4. The 3 Hapur factories have a pool and distribute profits irrespective of work done. There is thus no competition between them. Two were actually working in 1921; one was idle. The ginning factories, except one, which also grinds wheat and lime, work only in cotton season and remain closed for the rest of the year.

(ii) *Local use.*—

Total production	...	119,218	maunds.
Export	...	73,218	„

The remaining 46,000 is locally consumed.

(iii) *Price.*—Average price in 1921 was Rs. 25-8 a maund for ginned cotton.

(iv) *Remarks.*—There is scope for more mills. The present ginning factories ought to utilize their power in off season by taking up some other subsidiary work like *dal* kibbling, ice making, wheat grinding, oil pressing, &c.

There is no spinning mill at present, but one is needed. Out of the 46,000 maunds available for local consumption, some 7,000 maunds are used for padding in quilts, etc., and 39,000 maunds are available for hand spinning. The latter with cotton exported by ginning and pressing factories and which amounts to 28,597 maunds will be available for the spinning mill. There is a good demand for yarn in the district, which has more than 20,000 spinners and weavers and consumes about 72,000 maunds yarn every year. Hapur would be a good centre, as it has so many gins already working and good

railway and road connections. Meerut City would be the next best. Meerut has good irrigation facilities and can extend cotton cultivation.

(v) *Weaving*.—Coarse cotton mostly garha is woven in the district by Koris and Julahas. The number of actual workers in 1911 who were spinning cotton, doing sizing, and weaving was 14,049 males and 7,195 females, i.e., 21,244. Non-co-operation movement has added a large army to this number. Supposing a family consist of 4 members, there are about 5,000 families. One family weaves one piece of 12 yards garha weighing $1\frac{1}{2}$ seers in a day. Taking 300 working days in a year, the annual outturn comes to 1,500,000 pieces, weighing 56,250 maunds. The estimate of the earnings of a family is Rs. 1 to Rs. 1-8 a day.

Pilkhua in the tahsil of Ghaziabad is the chief market for coarse cloth. It exports 3,750 thans (pieces) every week worth Rs. 11,250 or about $\frac{1}{2}$ a lac rupees worth of garha every month. A little silk and karandi (waste silk) are also woven in a few factories lately started by the non-co-operators. These factories are equipped with fly-shuttle looms.

(vi) *Dosuti weaving*.—Dosutis (bed-sheets) are woven in village Phalauada of tahsil Mawana. A man turns out one piece in 3 days and charges Rs. 2 as his wage. A dosuti sells for Rs. 6, its dimensions are 12 yards by 27 inches. Yarn of 27 counts is mostly used.

(vii) *Niwar weaving*.—Meerut has 2,000 niwar weavers living mostly in Bagpat Gate and Shorab Gate. They weave both coarse and fine niwar. One man weaves 50 yards coarse and 25 yards fine niwar, in two days. The daily produce thus comes to 50,000 yards coarse or 25,000 yards fine niwar. It is woven on ordinary narrow looms and is exported to Bombay, Lahore, Peshawar and Calcutta.

Fifty yards of niwar requires 2 seers yarn which costs Rs. 4:

Price of 50 yards of niwar Rs. 5.

Wages of the weaver Re. 1 in 2 days or annas 8 a day.

Fifty yards of niwar require 2 seers yarn, i.e., 2,000 weavers consume 2,000 seers yarn daily=600,000 seers in a year of 300 working days=15,000 maunds.

(viii) *Durrie weaving*.—Meerut produces durrries of various sizes and designs on ordinary looms, each worked by 4 to 9

people. An ordinary durrie measuring $2\frac{3}{4}$ yards \times $1\frac{1}{2}$ yards or $2\frac{10}{16}$ yards \times $1\frac{10}{16}$ yards weighs 3 to 4 seers and is made in a day by 5 persons. There are about 100 workers in the district and their daily output is 20 durries, i.e., 6,000 in a year of 300 working days. The consumption of yarn is 18,000 to 24,000 seers or 450 to 600 maunds. Both mill and hand-spun yarn is used. The latter is bought at 12 annas a seer. An ordinary durrie sells for Rs. 5 to 6.

(ix) *Hosiery*.—This is a promising industry of Meerut City. There are 3 factories and a municipal aided hosiery school in Shahpur Gate, Meerut City. Harrison machines with 120 to 140 needles are ordinarily used. Yarn is bought ready dyed. Daily output is 100 pairs of socks or 30,000 pairs in a year of 300 working days. This is all exported. Average price is 8 to 10 annas per pair. Double heel and double toe socks are also made and are more durable than the ordinary foreign stuff.

(x) *Remarks*.—A power driven hosiery mill would succeed, as Meerut has developed into a big distributing centre.

Statements showing particulars about the ginning factories mentioned in para. XIA-(i) (c).

1. JOGI RAM JANKI DAS GINNING AND PRESSING
FACTORY, HAPUR.

Year.	Daily labour.		Total labour engaged.	Number of working days.	Total outturn.	Engine steam.	Remarks.
	Men.	Women.					
1921	33	19	6,993	48	10,702 mds.	20 H. P. 56 H. P.	53 men when the press is working and 33 when the press is not working.
1922	52						
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							

2. CHIRANJI LAL ROOP CHAND'S FACTORY.

Year.	Daily labour		Total labour engaged.	Number of working days.	Total outturn.	Engine.	Remarks.
	Men	Women.					
1921		80	4,681	61	13,975	19 H P	
1922						24 H. P.	
1923						40 H. P.	
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							

3. RAGHUBAR GINNING AND PRESSING FACTORY.

Year.	Daily labour.		Total labour engaged.	Number of working days.	Total outturn.	Engine	Remarks.
	Men.	Women.					
1921	The factory did not work in 1921.
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							

4. KISHORI LAL LIME MILLS AND GINNING AND PRESSING
FACTORY, MEERUT.

Year.	Daily labour		Total labour engaged.	Number of working days.	Total outturn.	Engine.	Remarks.
	Mon.	Women.					
1921	80		4,000	50	3 500 mds.		
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							

(B) Wool.

(i) *Raw material*.—The total number of sheep in the tahsil of Sardhana exceeds 20,000. There are 2 clippings in a year—September and March. The wool from the latter clipping is better and sells dearer. It is comparatively free from dirt and dead hair. The raw wool obtained in the district from both the clippings would not exceed 800 maunds, putting an average of 5 chhataks to a sheep. The yearly consumption of wool in Meerut district is estimated to be 1,800 maunds. The wool used in the district is therefore mostly imported from the Punjab and Rajputana. Some is obtained from Tibet and the Kumaun division. It is the best and is used for finer counts. Canel hair wool of natural brown

colour is much esteemed, but is not available in any appreciable quantity. It comes mostly from Rajputana.

Prices of wool are :—

Hill wool	6 chhataks for a rupee.
Camel hair wool	7 " " " "
Other sheep wool of first quality	8 to 10 chhataks per rupee.
Local wool of inferior quality	1 seer 5 chhataks to 1 seer 9 chhataks per rupee.

Much difficulty is experienced in the purchase of wool from the Punjab and Rajputana. The weavers go personally in groups to buy the wool there. The cost of travelling, the inconvenience thereof, the competition by a large number of purchasers going at one time raises the price of wool to a very high figure. A better system would have been for a few representatives to go and buy wool, but the mutual distrust stands in the way of its consummation. Co-operative Stores will be a way out of the difficulty if one could be organized in the present conditions of trade jealousy. At the same time Gadaryas resent any other caste from coming in the trade. So a Co-operative Store is the only chance, and should certainly be preferable to a particular dealer or a Joint Stock Company.

(ii) *Blanket weaving*.—There are about 1,000 Kamalyas in villages of Nirpura, Lawar, Jwalagarh, Rohasa, Jhota, and Salawa of tahsil Sardhana. Nirpura and Lawar are the chief centres of the industry. Ordinary blankets are made in the following sizes, but rugs of any size can be made. Small strips of blanket cloth are woven 21" to 30" wide and these are sewn together :—

Ordinary	2½ yards	×	1½ yards.
Superior	2¾ " "	×	1¾ " "
	1½ " "	×	1¾ " "

White, brown, shutari, and black are the colours in which blankets are made, being the natural colours in which wool can be had. Plain, bordered or check blankets are made, but wool is not dyed. Dyed blankets can be made to order. Lately the manufacture of puttoo and tweeds has also begun. Hand-spun yarn about 3s to 8s is used,

Prices.—Prices range from Rs. 3-8 to Rs. 50, average being Rs. 12 to Rs. 25 according to the closeness of texture and the quality of wool used. Rupees 25 is the price of a thick, soft, brown camel-wool blanket, $1\frac{1}{2}$ yards \times 3 yards. Brown blankets are the dearest and black the cheapest, as it is difficult to get brown wool; while black is the common colour; moreover brown wool blankets are soft and durable.

Process.—Process of blanket weaving is described in the monograph on wool. Carding is done by local Dhuniyas and wool is spun by hand on charkhas. Rice and flour are used for sizing: Blankets are woven in strips 21" to 30" wide and then sewn together and milled, i.e., kneaded with feet by dipping and washing with water. Sulphur is used in milling to remove the offensive smell and oil girt is added in cheaper ones to add to the weight. Looms of very narrow width are in use. Flyshuttle looms are not in vogue.

Cost of making an ordinary black and white blanket.

			Rs.	a.	p.
Price of wool	...	...	1	12	0
Spinning charges	...	...	0	10	0
Carding	..	...	0	4	0
Sizing	..	...	0	4	0
Milling	..	...	0	4	0
Establishment and other charges	...	...	0	6	0
			<hr/>		
		Total	3	8	0
			<hr/>		

This will sell for Rs. 6-8 to Rs. 7. A Gadarya family makes such a blanket in 2 days, thus earning Re. 1-8 to Re. 1-12 per day.

Marketing.—There is no particular system of advertisement. Inferior quality blankets are sold in village markets. Superior ones are taken to the fairs. Dealers from outside come and buy the blankets locally and some dealers of Nirpura, Lawar, and Meerut also buy small consignments. Kamaliyas are a poor class and have to borrow money to purchase wool at very high rates, seldom below 20 per cent. Sometimes they take advances from dealers and in return have to sell their goods to them at much reduced prices.

Suggestions.—(a) Nirpura and Lawar are both at a great distance from a railway station or a metalled road. Lawar is 9 miles from Meerut on a *kachcha* road and Nirpura 28 miles

from Meerut. Ten miles from Sardhana, and 10 miles from Ailum on the Shahdra-Saharanpur Light Railway. Transport difficulty stands much in the way of the expansion of the industry. To remove this difficulty—

- (1) either a railway line be constructed to run from Garhmukteshwar via Shahjahanpur, Kithor, Parichhatgarh, Mawana, Phalauda, Lawar, Sardhana, Barnawa, Daba, Nirpura to Ailum.

The attached sketch map will help in showing clearly the places through which the railway line should pass. All the above places are industrial centres:—

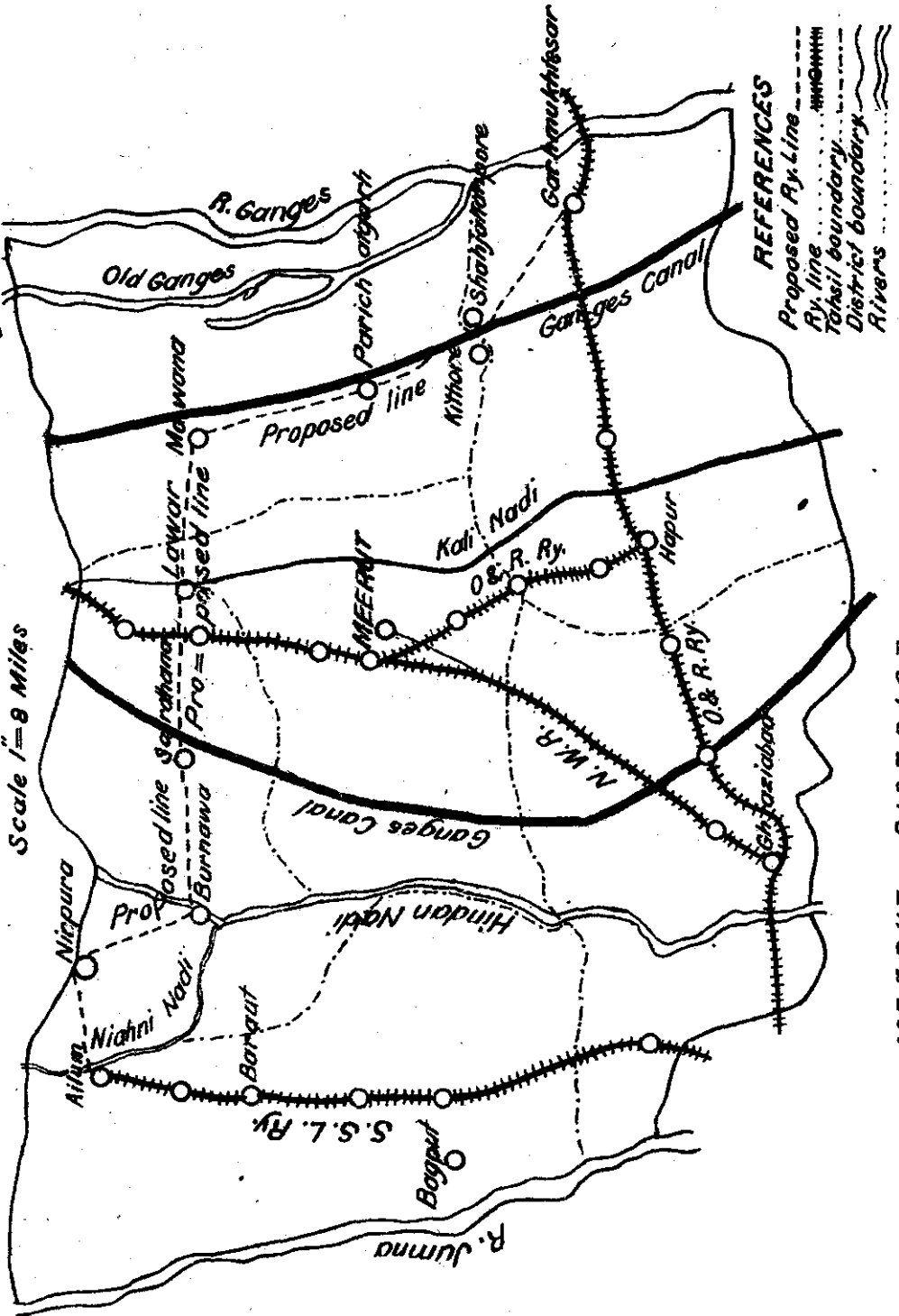
- (2) The road from Meerut to Lawar 9 miles and from Lawar to the Provincial Meerut-Roorkee road (2 miles) be metalled.
- (3) Some defect exists in the milling of the blankets by which they emit a bad smell when wet. This should be removed.
- (4) The Kamaliyas should be taught the processes of dyeing wool by sending a peripatetic school there.
- (5) Fly-shuttle and looms of greater widths should be introduced. A peripatetic instructor is required, as Kamaliyas would not leave their homes.
- (6) Co-operative purchase of wool and sale of blankets would be of great benefit.
- (7) The municipality charges an *ad valorem* rate as octroi and in order to levy it the municipal authorities put a very high estimate on the price of the blankets. This should be remedied.
- (8) A little warm clothing has begun to be woven. If fine cloth can be woven, this should be encouraged.

(C) FIBRES.

(i) *Raw material*.—The estimated quantity of grasses in the Ganges Khadir is as follows:—

Description.	Quantity in mds.
Moonj	5,500
Beend	22,000
Poola	29,000
Nul	900,000 in No.
Date palm leaves	14,000 Mds.

SKETCH MAP OF MEERUT SHOWING THE PROPOSED RY. LINE.
Scale 1" = 8 Miles



MEERUT DISTRICT

This raw material is at present utilised in the following manner :—

Beend and pula are used for thatching purposes, while nul is used for *huqqa* pipes.

(b) Munj is twisted into ban (strings).

(c) Date palm leaves are woven into mats.

(d) Beend, pula, munj are utilised for moondda.

Of these mat, ban and moondda making deserve more than a passing mention. Mats are made of palm leaves in large numbers in the tahsil of Mawana and are exported to Meerut. One 3 yards \times $1\frac{1}{2}$ yards would cost Rs. 0-6-0. About 600 persons are engaged on this work. Each can make 2 mats 3 yards \times $1\frac{1}{2}$ yards in a day.

(ii) *Moonddas*.—Moonddas are made in Garhmukteshwar and exported to Moradabad, Delhi, the Punjab, Saharanpur, Bulandshahar, Meerut City and other places. About 28 persons are engaged on this work. One man can make one armed moondda on a summer day and one ordinary moondda on a winter day. One armed moondda would cost Re. 1, an ordinary one Re. 0-8-0. They are usually sold in the famous Garhmukteshwar Fair. Moondda makers are also day labourers. The annual export to Meerut City and the Punjab is 2,000.

(iii) *Fine ban (string)*.—Fine ban string is made at Garhmukteshwar out of munj. Coarse string is also made in other villages in the khadir. About 200 persons carry on this work. One man can twist 3 seers ban in a day when he is helped by his wife and a child who assist him in twisting. The 3 seers of ban will sell for Re. 1 leaving the family ten annas only, as munj costs six annas.

(iv) *Remarks*.—The quantity of grasses available for the above industry can be easily increased if there were a demand for them. Demand can be increased by proper advertisement. At present even the District Jail authorities do not know that munj is available in their own district and are getting it from Kasganj in Etah district. Organization and capital are the two requirements of these industries which can easily be developed to any extent.

XII.—Woodwork.

The number of carpenters in the district is 14,395. With the exception of a few carpenters at Meerut, all are engaged in

doing work for cultivators and zamindars in villages, i.e., the making and repairing of agricultural implements. No particular wages are paid generally, but they have got certain rights and claims in the agricultural produce of the land. Sometimes they are paid by piece work.

The carpenters of Meerut mostly do the building work on daily wages of Rs. 1-8 a day. Some of them make carts on their own account. There is no speciality in the industry. A furniture factory has been started by a capitalist of Khairnagar Gate. Very nice chairs and sofas are made there. Drawing room suites and dressing tables are really elegant, but the prices seem to be exorbitant, e.g., Rs. 25 for an ordinary cushion chair with black varnish. The manufacturer has been awarded a silver medal in Nauchandi. Some woodwork like furniture making is carried in Vaish Orphanage Technical School, Meerut, and Mission Boys' School, Sardhana. But this is inconsiderable.

CHAPTER III.

INDUSTRIAL POSSIBILITIES.

1. *Spinning mill.*—When considering the possibilities of the district the first thing that strikes one is the need of a spinning mill. Four ginning and pressing factories are already working in the district. The district consumes 56,250 maunds of yarn for garha cloth, 15,000 maunds for niwar, 600 maunds for durries and 250 maunds for hosiery and miscellaneous use, i.e., the total consumption of both mill and hand spun yarn is 72,100 maunds, and imports no less than 70,000 maunds mill yarn worth about 50 lacs of rupees from Ahmedabad, Agra and Delhi mills. The local mill will capture this demand and cater for the markets of the neighbouring districts as well. The demand for yarn is increasing with the demand for swadeshi cloth. The district produces over a lac maunds of cottor, out of which about 29,000 maunds is locally ginned and pressed by the four ginning and pressing mills of the district. Hapur will, in my opinion, be the best place for location of the mill. It has 3 ginning factories and very good railway connections with E. I. Ry., O. & R. Ry., & N. W. Ry. It is only 86 miles from Delhi, 19 miles from Meerut and 64 miles from Moradabad. Meerut City will be the next best. But to be successful the mill should be started with a sufficient capital to run on a large scale with several thousand spindles.

2. *Tannery.*—The next important thing which Meerut needs is a good tannery. Raw material is available in the district itself, Ghaziabad, Sardhana and Pilkhua being very big markets for hides and skins. Pilkhua alone exports 2,600 maunds of raw hides and skins, Lawar 40,000 and Ghaziabad 20,000 raw hides and skins. Meerut has got abundant supply of Babul bark also as the Ganges khadir abounds in Babul trees. Pure kankar lime is also available in Meerut and Ghaziabad tahsils. A considerable quantity of tanned leather is imported from Delhi or Cawnpore. Small factories for making boots, hand-bags, suit cases, etc., are springing up, each giving employment to 10 to 50 workmen. Unfortunately import figures are not available, but there is, I believe,

sufficient demand to warrant the immediate starting of a good tannery. Meerut will be the best place of location as the consumption of leather is greatest in the city and big markets for hides like Lawar, Ghaziabad and Hapur are close to it. There is no difficulty about the supply of water or about the drainage. In short, all requisite raw materials for a tannery are available in the district and at hand. An enterprising capitalist should come forward and use them to his advantage. Manufacture of leather in India ought to engage the attention of our progressive tanning industrialists, since this new line will certainly bring them more profits than are being made by exporting raw hides and skins.

3. *Bone-meal*.—Meerut exports approximately 50,000 maunds of bones annually to Bombay. The use of bone-meal as manure is being recognised, and with the help of the Agricultural department there will be established a very good market for bone-meal in the district itself which grows a lot of rich crops like sugarcane and potato. Bone manure can easily be made as sulphuric acid is now begun to be made in Ghaziabad. The best place for the bone-meal factory would be Ghaziabad where there already exists a factory for manufacture of sulphuric acid.

4. *Glass factory*.—I would also recommend a small glass factory at Garhmukteshwar for making gangajalis. Raw material in the shape of reh is available in the Ganges khadir and there is a big demand for these gangajalis from pilgrims coming to bathe in the Ganges at Garhmukteshwar. Tin canisters or tin gangajalis are at present used, but as the water soon gets the red colour of the tin rust, glass gangajalis will be preferred. These are taken by the pilgrims in small bamboo baskets to long distances. The demand in Garhmukteshwar for these glass gangajalis is sufficient to feed a small factory.

- This can be started by a small capitalist.

5. *The fibres*.—Munj palm leaves, beend and pulas growing abundantly in the khadir should be utilised locally. Munj matting, basket making and making palm mats and moonchhas should be encouraged by organizing small factories. Some aloe fibre is also obtainable and could be used in making mats and ropes.

6. *Utilisation of slaughter-house bye-products*.—There are at present two glue makers in Meerut who manufacture *sares* and glue by ordinary old process of refining intestines.

There is an abundance of raw material in the town and a glue factory can easily be started. I think want of technical knowledge is standing in the way.

7. *List of foreign articles usually seen in the markets of Meerut district and the possibility of substituting them by Indian made things.*

GROUP A.

Commodities in which Indian made goods prevail :—

- (1) *Soap*.—Locally made.
- (2) *Blankets*.—Local and Muzaffarnagar.
- (3) *Scissors*.—Local.
- (4) *Boots and shoes*.—Local and from Agra, Lucknow and Calcutta.
- (5) *Sporting material*.—Local cricket balls and occasionally from Sialkot.
- (6) *Lamp and lantern chimneys*.—From Bahjoi and Ganga Glass Works, Balawali.

GROUP B.

Commodities where foreign articles are seen with Indian goods in almost equal quantities :—

- (1) *Locks*.—Hapur, Aligarh and foreign.
- (2) *Cloth*.—Local and that made in Indian mills. Silks from Benares, Azamgarh and Shahjahanpur, Ludhiana and Amritsar. Foreign cloth and silks are also available side by side with the above Indian goods.
- (3) *Pottery*.—Bahadurgarh tea cups and sets and also foreign.
- (4) *Stationery*.—Delhi and Lucknow made inks are being introduced, but Stephen and Swan inks are mostly used. A professor of Meerut College is trying to make inks from indigenous articles and he has succeeded partially, but they are not in market yet. Calcutta made pencils are seen, but mostly American pencils are used. Agra pencils are not yet seen in the market. Gujrat nibs are seen here and there in small quantities, otherwise foreign nibs are mostly used.
- (5) *Leather fittings*.—Shoe rings, laces, rivets for suit cases and bags, locks and frames are all foreign. Locks and handles are Indian. Something should

be done to make these things in India as there is a big demand for them.

- (6) *Caps*.—Foreign felt caps and Turkish caps are mostly sold. Gandhi khaddar caps are coming in vogue and Aligarh felt caps have also been introduced.
- (7) *Matches*.—Ahmedabad matches are seen occasionally, but Japanese matches have captured the market.
- (8) *Brushes*.—Meerut brushes are coming into use, also Cawnpore and foreign.
- (9) *Scents*.—Foreign scents are used, but Kanauj and Lucknow scents are also sold in the market.
- (10) *Oils*.—Few foreign hair oils are in the market, but scented floral oils from Delhi, Jaunpur or medicated oils from Bengal are mostly used.
- (11) *Wire and tinsel*.—Come from Surat, Delhi and Agra, but the major portion is foreign, the imports of which come to about Rs. 5,000 a month.
- (12) *Cigarettes*.—*Biris* are mostly coming into vogue. But "Scissors" are still popular. Lahore cigarettes are used very little.

GROUP C.

Articles which are wholly foreign :—

1. Tennis balls and other rubber goods.
2. Caustic soda.
3. Dyes.
4. Perfumes for soaps.
5. Chemicals.
6. Watches.
7. Clocks.
8. Fire-arms and ammunition.
9. Lamps.
10. Needles.
11. Lanterns.
12. High class Rackets.
13. Enamelled utensils.
14. Cycles, motors and machinery.
15. Good razors.

With the exception of caustic soda and sporting material, perfumes, lamps, lanterns and razors, there is no hope of any of the above being made locally.

CHAPTER IV.

Statistics.

BLANKET WEAVING.

Raw materials.—About 1,800 maunds of different kinds of wool is annually consumed. Out of this the local supply of wool is about 800 maunds. The rest is imported.

Imports.

No.	Kind of wool.	Quantity (approximate).	Value.	Place of origin.
		Mds.	Rs.	
1	Camel wool...	20	1,828	Rajputana and the Punjab.
2	Sheep wool (ordinary quality).	950	Not definite as it depends on the quantity.	Ditto.
3	Hill Sheep wool	30	3,200	Tibet and Kumaun division.
4	Local sheep wool.	800	24,000	Local.

No. of persons employed.—1,000 men and women in all.

Wages.—The families do their own work and do not engage labourers for weaving. The carder of wool (dhuna) is given Re. 1 per 10 seers for carding. The spinner (village woman) is given 4 annas a seer for spinning.

Outturn.—One family consisting of a man, woman and child can produce one ordinary blanket in two days. There are about 400 such families and they work for four months in a year, i.e., for 120 days. Thus the total outturn per season amounts to 24,000 blankets. The value of these blankets is about Rs. 1,92,000 at an average price of Rs. 8 per blanket.

BRASS, ART AND DOMESTIC.

Raw materials.—Broken utensils of brass, Phul (bell metal, an alloy of tin and copper) and kaskut (Princes metal, an alloy of zinc and copper).

Imports.—350 maunds or Rs. 11,200 in value are imported from Delhi.

Exports.—*Thalis, katoras, batulis* are exported to Delhi and the Punjab. The quantity exported annually is 25 maunds worth Rs. 2,000.

Local consumption.—260 maunds of *thalis, katoras, batoha, patilis, huqqas*.

Manufacture.—On a household industry basis.

Number of persons employed.—50 men (Thateras).

Wages.—The dealers (Kaseras) give 1 maund $7\frac{1}{2}$ seers of raw material and Rs. 20 to the manufacturer and get back 1 maund of manufactured articles. Thus the wages come to a little more than 8 annas a seer. This is a system of piece work of contract.

Outturn.—295 maunds of articles annually.

CALICO PRINTING.

Raw materials.—Swadeshi garba cloth.

Imports.—Nil.

Exports.—Nil.

Local consumption.—The estimated number of *toshaks* (bed sheets) and *lihafs* consumed yearly in the district is about 2 lacs. Out of this about 11,000 pieces are locally printed, and the rest is imported from Jehangirabad, Lucknow and Furrakhabad.

Manufacture.—On a cottage industry basis.

No. of persons employed.—The number of calico printers or *chhipis* in the district is 122,159 males according to census. They are engaged in the work for 3 months, i.e., *Bhadon, Kuar and Katik*, which correspond to September, October and November.

Wages.—No outside labour is engaged, hence no wages are paid. If the *chhipi* does the work to order he charges 6 annas a piece; thus gets a profit of 3 annas per piece, as the raw material costs 3 annas.

Outturn.—One *chhipi* can print two bed sheets in a day. The annual outturn thus comes to be about 11,000 pieces.

COTTON GINNING AND PRESSING.

Raw materials.—Cotton.

(1) *Imports.*—Nil, as the cotton was supplied from the local produce by zamindars.

(2) *Exports.*—73,218 maunds of cotton in 1921.

Place of consignment.—Chiefly Bombay.

(3) *Local use.*—Very little of ginned and pressed cotton, 46,000 maunds.

Manufacture.—There are four big factories, out of which three worked in 1921.

Place of location.—Three mills are at Hapur and one is at Meerut.

Labour (number of hands).—The labour engaged in all the factories in 1921 was approximately 222 daily. The total labour combined for all the working days of the year 1921 was 16,174 men and women.

Wages and system of payment.—A man is paid 8 to 12 annas a day, while a woman is paid 6 to 8 annas a day. The system of weekly payment is in practice.

Annual outturn.—The total outturn in 1921 was 28,597 maunds worth Rs. 7,32,000 approximately.

Year.	Outturn in maunds.	Value in rupees.	Remarks.
1922			
1923			
1924			
1925			
1926			
1927			
1928			
1929			
1930			

CRICKET AND HOCKEY BALL MAKING.

Raw materials.—Woollen yarn, leather, cork and refuse bits of leather.

Imports.

No.	Name of goods.	Quantity.		Value.		Place of origin.
		Mds.	Rs.	Mds.	Rs.	
1	Woollen yarn	337	35,900			Chiefly Dhariwal.
2	Leather ...	...	27,000			Chiefly Cawnpore and Mysore; some foreign too.
3	Cork ..	...	3,000			Foreign.

Exports.—About 8,000 dozen worth Rs. 72,000 to Rs. 1,92,000, exported chiefly to England.

Local consumption.—About 250 dozen of locally manufactured balls worth Rs. 9,000 and some Duke balls imported from England.

Number of persons employed.—50.

Wages.—Rupees 25 to Rs. 40 a month. System of payment is irregular.

Outturn.—One man can make 8 to 9 ordinary balls or 5 to 6 good balls a day. The total outturn is thus about 1,000 gross annually.

EMBROIDERED CAPS.

Raw materials.—Sulma, sitara, kalabatun silk and cotton reels, velvet, silk, satin and Italian cloth to the value of about Rs. 60,000 are imported from Delhi either by the manufacturers themselves, or by the dealers of Meerut. Both foreign and Indian manufactures are used.

Exports.—The annual export amounts to Rs. 24,000 in value, chiefly to Bengal where Meerut caps are still in fashion.

Number of persons employed.—125 men wholly engaged and 1,000 men partly engaged.

Wages and system of payment.—Wages are paid by piece work. For fine work the wages depend on the amount

of raw material stitched, e.g., from 10 to 12 annas per tola of sulma or kalabatun.

Advances are given to workmen and women by the factory owners and they are bound to work under an agreement. Thus the workmen are always in debt.

Outturn.—Nowadays embroidered caps, saris, pyjamas, shirts, dopattas and handkerchiefs of Rs. 5,000 in value are produced every month. Out of this the value of caps alone is Rs. 3,000 or a little more.

FELT CAP MAKING.

Raw materials.—Woollen cloth—

- (a) The manufacturers buy the woollen cloth and cut-pieces from the local cloth merchants. Sometimes they get it from Delhi. Only Indian made woollen cloth is used, e.g., puttoos of Kashmir, tweed, checks, broad cloth, Kashmiri cloth, flannel pieces of Cawnpore mills.
- (b) There are no exports.
- (c) The caps are made for local use and consumption, different sorts of caps, e.g., ordinary felt cap, kalpak, kishtinuma, Gandhi cap and others. The number produced is sufficient for local use. The shape is quite good.
- (d) There are no transport difficulties.

Manufactures.—It is a household industry.

- (a) *Number of persons employed*—15.
- (b) *Wages.*—They do their own business.
- (c) *Outturn.*—The total outturn by these 15 men is 15 dozen caps per day, i.e., 450 dozen a month.

GARHA AND DOSUTI WEAIVING.

Raw materials.—Cotton yarn, both handspun and mill made generally of 14½ and 17½ counts and sometimes of 20, 27 and 40 counts, is used, 72,000 maunds of yarn is a rough approximation of the quantity of yarn annually consumed by this industry in Meerut district.

Imports.—About 70,000 maunds of mill yarn is imported from Agra, Ahmedabad, Delli, Moradabad and Cawnpore.

mills for garha, dosuti, niwar, durrie and miscellaneous. The value of this yarn comes to be about 50 lacs of rupees.

Exports.—The annual export of garha to the Punjab is nearly 560,000 full pieces weighing 20,000 maunds, worth Rs. 19,60,000 at an average price of Rs. 3-8 per piece. The export to other places could not be estimated.

Local consumption.—The annual local consumption is about three lacs pieces.

Manufacture.—On a cottage industry basis. Besides this there are 45 hand loom factories working with fly-shuttles in the district, but they are not paying concerns and cannot compete with the weavers who mostly use the cheaper single yarn and hand spun yarn which the fly-shuttle looms of Meerut are not generally using owing to want of a proper sizing. Moreover, the weavers sell their products by roaming in the city from door to door without any consideration of the value of time.

Number of hands.—5,000 families of weavers.

Wages.—The weaver families do their own business and do not engage labourers. The hand loom factory owners, however, engage weavers on daily wages of Rs. 1-4.

Outturn.—One family can weave one full piece, i.e., 12 yards of garha, in one day. Thus the annual outturn is about 15 lacs full pieces of 12 yards each and 45 lacs of rupees in value at an average price of Rs. 3 per piece.

INDUSTRY.—GLAZED POTTERY.

Size of industry.—22 factories.

Raw materials.—Clay of local origin from ponds or fields; colouring material also of local make.

Manufacture.—On a cottage industry basis.

Number of persons.—22 families are engaged in the work.

Wages.—Amount of wage cannot be defined, because in a factory consisting of one family, separate wages or workmen are not charged.

Outturn.—This cannot be laid down with precision as it is not definite and depends on orders received. Several thousands *chilams* and other utensils for domestic use, such as cups, jars, plates and *handis*, are produced every month.

INDIGO MANUFACTURE.

Raw materials.—Indigo plants which are cultivated in the village of Athsaini, Daotai, Popai. In 1921 the area under cultivation was 1,243 acres in the whole of the district.

Exports.—In 1921 the quantity of export was 39 maunds to Bombay and Calcutta.

Manufacture.—On a small factory basis. There are three factories :—

Year.	Capital spent on sowing.	No of persons.	Wages.	Outturn.	Profits.	No. of working days
1. Indigo Factory, village Athsaini, tahsil Hapur.						
	Rs.				Rs.	
1921	1,000	200 men	7 to 10 annas a day.	...	500	29 days.
2. Indigo Factory, village Daotai (Hapur).						
1921	490	65 men	7 to 10 annas a day.	11 mds worth Rs. 2,950 or Rs. 6-12-0 per seer.	350	20 days.
3. Indigo Factory, village Popai (Hapur).						
1921	175	50 men	7 to 10 annas.	8 mds. worth Rs. 1,000 or Rs. 3-2 a seer.	...	20 days.

Total annual outturn.—In 1921 the outturn was 39 maunds of indigo or Rs. 9,450 in value.

LAC AND PAPER TOYS.

Raw materials.—Mango wood, cowdung or waste paper, methi seed, glue, linseed oil and country paints.

Imports.—Nil.

Exports.—Nil.

Manufacture.—As a subsidiary work on a cottage industry basis.

Number of hands employed—20.

Outturn.—25 to 50 small toys worth Rs. 2-8-0 in two days by one family.

The product of this industry is meant for local consumption.

LAMP MANUFACTURE.

Raw materials.—Galvanised iron sheet, 500 maunds, valued at Rs. 17 a maund.

Burners (Japanese brass burners)—

Double wick at 12 annas each.

Single wick at 6 annas each.

Chimneys (India made)—

Double wick at 2 annas 6 pies each (wholesale rate).

Single wick at 2 annas each (wholesale rate).

Paints—12 annas a tin of 1 lb.

Capital.—Rs. 10,000, including the price of 500 maunds of steel.

Number of persons employed.—12 men in all, i.e., one clerk, one menial servant and 10 workmen.

Wages and system of payment.—The clerk is paid Rs. 30 a month. The menial servant gets Rs. 8 with board and lodging. The workmen and artisans are paid on a sort of contract piece work according to the following scale:—

3 annas for making a double wick wall lamp.

2 annas for making a double wick table lamp.

1½ annas for varnishing.

Outturn.—5 dozen or 60 lamps are turned out in 3 days. This comes to 20 lamps a day.

NIWAR MAKING.

Raw materials.—Cotton yarn. The consumption amounts to about 15,000 maunds, which is mostly hand spun.

Imports.—About 5,000 maunds of yarn is imported for niwar making from the neighbouring districts of Moradabad, Bulandshahr and Muzaffarnagar.

Exports.—About 14,000 maunds of niwar is annually exported to Bombay, Lahore, Peshawar and Calcutta.

Manufacture.—On a cottage industry basis.

Number of persons engaged.—About 2,000 in all.

Wages.—No labourers are engaged.

Outturn.—The daily outturn is about 50,000 yards coarse niwar or 25,000 yards fine niwar.

OIL PRESSING.

Raw materials.—Oilseeds, such as (1) linseed, (2) sesamum, (3) rape and mustard, (4) castor seed, (5) neem seed.

Imports.—Nil.

Exports.—Nil.

Local consumption.—The estimated amount of oil pressed in a year is about 46,000 maunds. This is all consumed locally.

Manufacture.—On a cottage industry basis.

Number of persons employed.—The number of *telis* (oil-pressers) in the district is 19,256 men and women. These families are solely engaged in the work for four months in a year. For the rest of the year they are partially engaged.

Wages.—No outside labourers are engaged, hence no wages are paid. Members of the *teli's* family co-operate in the whole work. If the *teli* works for a zamindar he retains the oilcake in lieu of his wages.

Outturn.—One family with the help of 2 bullocks can press 20 seers in a day using one *kolhu*; the amount of oil obtained is 5 seers out of *lai* and $6\frac{3}{4}$ seers out of sesamum, i.e., $\frac{1}{2}$ out of *lai* and *tara* seeds, and $\frac{1}{2}$ out of *sarson* and *tili* seeds.

SCISSORS.

Raw materials.—Iron and steel.

Iron required for the manufacture of 1 dozen average scissors is $2\frac{1}{2}$ seers. Thus for 25,200 dozen, which is the annual outturn, the quantity of iron required is 1,575 maunds which is purchased from the local dealers. This is generally refuse railway stock. The price of this iron is $2\frac{1}{2}$ seers per rupee.

Exports.—The amount of export of scissors is, about 25,000 dozen to all the cities of India.

Local consumption.—The local consumption is about 200 dozen a year.

Number of persons employed.—250 workmen and a number of boy labourers for working the bellows.

Wages.—Wages are paid on piece work system, e.g., 6 annas a dozen for tempering, one rupee for grinding on emery wheels, 7 annas 6 pies for polishing, etc., 4 annas for rivetting and nailing, 12 annas for final sharpening, Rs. 1-4 for shaping into crude parts. Thus the whole of the work is done on a system of contract.

Outturn.—The daily outturn varies between 50 and 100 dozen. Thus the average annual outturn is nearly 25,200 dozen. The average price at Rs. 9 a dozen comes out to be Rs. 2,26,800.

TOILET SOAP INDUSTRY.

Raw materials.—Lime, saji, cocoanut oil, castor oil, caustic soda, some mahua oil for inferior soaps, perfumes and dyes.

IMPORTS—Approximate annual figures.

No.	Commodity.	Quantity.	Value.	Place of origin.
		Mds.	Rs.	
1	Cocoanut oil ...	1,620	40,500	South India, chiefly Cochin.
2	Perfumes ...		17,200	Foreign.
3	Dyes ..	...	360	Do.
4	Caustic soda ...	...	24,800	Do.

Export.—Soap worth Rs. 1,20,000 is exported annually to different cities of the United Provinces and other provinces. The sale is wholly Indian.

Local consumption.—The local consumption is about Rs. 10,000 in value.

Number of persons employed—60.

Wages.—The skilled workmen are themselves the owners of the factories. They engage labourers sometimes on monthly pay varying from Rs. 10 to Rs. 15 a month and sometimes on daily wages varying from 6 annas to 12 annas a day.

Outturn.—The monthly outturn of toilet soap is Rs. 12,000 in value, on a rough approximation.

EAST INDIAN SOAP FACTORY, DELHI GATE, MEERUT.

(a) *Working capital at present.*—Rupees 8,000.

(b) *Labour*—

(i) Number of hands—14. Out of these 2 are skilled and 12 are unskilled workmen.

(ii) Wages and system of payment. Workmen are paid monthly salaries varying from Rs. 10 to Rs. 25.

(c) *Total outturn in price.*—At present the monthly outturn of soap is of Rs. 2,000 only. If there is demand the factory has the capacity to turn out soap worth Rs. 5,000 a month.

(d) *Marketing system.*—Munna Lal Goyal, Soap manufacturer and dealer, is the sole agent of the East Indian Soap Factory. He is given a commission of 11 per cent. on sales.

(e) *Mechanical appliances used.*—Modern appliances are made use of. These are worked by hand power only.

(f) *System of advertisement.*—There is no special system of advertisement of their products at present, excepting that the factory has made Munna Lal Goyal of Kamboh Gate, Meerut, as its sole agent. They want honest travelling commission agents for advertising their manufactures.

TRUNK MANUFACTURE.

Raw materials.—(1) Galvanised iron sheets, (2) rivets, (3) padlocks, (4) hinges.

Imports.—About 180 maunds of sheet worth on an average Rs. 3,240 are imported from Delhi. About 20 gross brass locks worth Rs. 540 are imported from Benares.

Exports.—There is no export either of raw material or of the manufacture.

Manufacture.—The manufacture is on a small factory system, but the number of workers being less than 10 in each of the two factories, the industry is classed as a household one.

Number of persons employed.—There are 10 persons in all.

Wages.—Wages are paid weekly at rates varying from 12 annas to Rs. 1-4 a day. Some of the workers are permanently engaged on monthly salaries of Rs. 30 a month.

Outturn.—Daily 8 trunks of 24" length, worth Rs. 72

CHAPTER V.

DIRECTORY.

(a) List of Banks.

1. Imperial Bank of India.
2. Alliance Bank of Simla.
3. Allahabad Bank, Limited.
4. Co-operative Bank, Meerut.
5. Co-operative Bank, Post Office, Bhatiana.

(b) Technical Schools.

1. Government Leather Working School, Meerut.
2. Vaish Orphanage Technical School, Meerut.
3. Government Peripatetic Weaving School, Hapur.
4. Mission School, Sardhana.

Besides these schools there are a number of Girls' Schools in which needlework and embroidery is taught to the girl side by side with education in other subjects.

(c) Sarrafs.

1. Niadur Mull, son of Beli Ram.
2. Jwala Pershad Babu Lal.
3. Ramchandra Banarsi Das.

(d) Yarn dealers, also dealers in niwar and durrie of Meerut.

1. Ram Chandra Munib.

(e) Hosiery manufacture dealers.

1. Municipal Hosiery School, Shah Pir Gate.
2. Hafiz Inam Ullah, Naya Bazaar.
3. Jira Nand, Beru Kuan.
4. Umrao Singh, Bazaza Bazaar.

(f) Weaving factories.

1. Sri Ram Kahari, Kahari Bazaar.
2. Raghubar Dayal Vakil, Pathurwala.
3. Joti Pershad, near tahsil.

Principal weavers—

1. Abdul Karim Hajiwala, Shah Pir Gate.
2. Bundoo, son of Rahim Bux, Shah Pir Gate.
3. Baqi, son of Gidoo, Shah Pir Gate.
4. Abdullah, son of Allahdia Punchi, Shah Pir Gate.

Niwar weavers—

1. Piroo alias Pahlwan
2. Karimoo Khumra.
3. Husaina Khumra.
4. Mohammad Bux Khumra.
5. Khuda Bux Khalifa.
6. Nanwa Shaikh Khumra.

All in Baghpat Gate.

(g) Soap factories.

1. East Indian Soap Factory, Delhi Gate, Meerut.
2. Munnalal Goyal's Soap Factory, Kamboh Gate, Meerut.
3. Munna Lal Rastogi, Kamboh Gate, Meerut.
4. Munna Lal Agarwal, Kamboh Gate, Meerut.
5. Upper India Soap Factory, Kamboh Gate, Meerut.
6. Munna Lal Gupta, Veli Bazaar, Meerut.
7. Royal Soap Factory, mohalla Patthurwalan, Meerut.
8. Ganga Soap Factory, mohalla Dalumpara.
9. Norway Soap Co., Meerut.
10. Bar Soap Works, mohalla Nuqqarchian.
11. Muhammadan Soap Factory, Bazaar Shah Ghishu.
12. All India Soap Co., Sadar Bazaar, Meerut.

Besides these, other skilled persons do the work as a household industry.

(h) The chief manufacturers of cricket and hockey balls.

1. Messrs. Mazhar & Co.
2. Habib Bux & Co.
3. Dikshit & Co.
4. Regimental Sports Works.
5. G. L. Friend & Co.

(i) Chief lime factories.

1. Jat Lime Factory, Mohiuddinpur.
2. Ganesh Lime Factory, Meerut.
3. Vaish Lime Factory, Meerut.
4. Hanuman Lime Factory, Meerut.

(j) Embroidery factory owners.

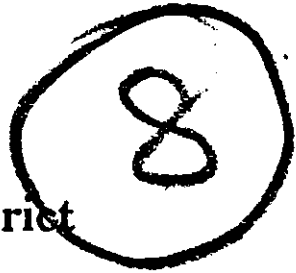
1. Elahi Bukhsh.
2. Zakir.
3. Darogha.
4. Kundan.
5. Bunsi.
6. Lachhu.
7. Birbal.
8. Pyarelal.
9. Nathumal.
10. Yusuf.
11. Panna Lal.
12. Chhuttoo.

Many men and women manufacture at home and sell their products to these and other dealers.

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Report on the
INDUSTRIAL SURVEY
of the United Provinces



Mirzapur District

By

B. R. BHATTA, L.M.E.



ALLAHABAD :

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FOREWORD.

MIRZAPUR has been famous for its foreign trade in woollen carpets and shellac for some time. Carpets are manufactured both in the town and in the mufassil of the district. About 5,500 people find employment in carpet weaving and export carpets worth about 15 lakhs of rupees annually. It is very regrettable, however, that Mirzapur is losing its good name in an attempt to manufacture cheap articles. Colours are not quite so good as before, because the weavers, who usually do the dyeing also, do not know the proper processes of using the modern synthetic dyes, and designs have few Indian characteristics in them. To remedy these drawbacks it will be very advisable for such weavers to arrange for short or irregular courses of training in modern methods of dyeing at the Government School of Dyeing and Printing, Cawnpore. Attempts should be made to introduce Indian designs. This point has probably not been considered by the carpet manufacturers of Mirzapur who cater for the export trade mostly. Valuable assistance may be expected from the Lucknow School of Arts and Crafts in the introduction of Indian designs for carpets.

Co-operative purchase of wool will help individual loom-owners, but what is chiefly wanted is an improvement in the quality of wool. European firms which have done much to build up this industry are using mill yarn, possibly of foreign origin, in their manufacture. The necessity of importing yarn from outside should be obviated as far as possible. But the chief thing which will maintain the good name of the district is the standardization of the quality. The carpets should be graded according to their quality before export, which should be marked on them. To effect this, it is suggested that an association of the carpet exporters be formed and information given to the importing firms with a request that they purchase only from the members of the Association. Mr. Chatterjee proposed such a league in 1907, but it never materialised. Manufacturers will be well advised to take steps in their own

interest to prevent export of unreliable goods or Government may have to put some sort of control upon exports, similar to that imposed by Japan to ensure that only goods of a certain quality leave the country.

About 1·65 lakh maunds of shellac worth about 2½ crores of rupees is exported every year from the district. The manufacture of shellac finds employment for 15,000 souls in about 80 small factories. Crude lac stick is imported mostly from the neighbouring provinces of Bihar and Central Provinces, though a little comes from the provinces of Assam, Berar and the Punjab. Comparatively very little lac is cultivated in the district which imports the raw material to the extent of 2½ lakh maunds worth about 1½ crores of rupees. Factories for the refining of lac are springing up in both Bihar and Bengal and the two main provinces which cultivate lac will soon be consuming their raw material. The result will be starvation of Mirzapur. The artificial advantage of the district in having trained labour and organization for the manufacture and distribution of shellac will not be able to save the situation. The ground is being slowly but steadily undermined. A systematic and scientific cultivation of lac in the forests of Mirzapur and other districts of the province is the only line in which salvation lies. Taluqdars and the Court of Wards estates can co-operate in a great measure. Their work will not be only philanthropic, but it will bring them a good return. Dhak grows plentifully in many estates, and is at present used only as fuel. A better use will be made of the tree if lac were cultivated on it. Prompt and vigorous action is required.

The shellac trade has suffered a good deal from the vagaries and uncertainties incidental to speculation. Elimination of these is a prime necessity of the trade. The processes of manufacture also require improvement. Canadian and Bareilly rosins are used for admixture with lac in the manufacture of shellac to the extent of half and half. Canadian rosin is the dearer of the two, but is lighter in colour. Bareilly rosin is used because of its cheapness. If Bareilly rosin can be improved, it can easily come in more extended use. The trade has also been affected by great fluctuations in prices, but just as was remarked by Mr. Chatterjee in 1907,

this cannot be remedied until a demand grows up for shellac in the country itself in the shape of works for the manufacture of varnishes. Lac dye which is obtained in the refining of crude lac is largely exported to Calcutta. It is also used in the country by women for painting their feet with (Mahawar).

Besides shellac and carpets, Mirzapur has an extensive trade in brassware which are manufactured in Mirzapur for Indian consumption. The industry finds employment for 5,000 men in 150 factories. About 2½ lakh maunds raw material—brass sheets and ingots or broken utensils—are imported and manufactured vessels of the value of over 85 lakhs of rupees are exported every year. The design is peculiar and not much elegant in appearance, neither are the vessels of light weight. Their substitution by china aluminium or other wares is only a question of time. Machine-made utensils of brass are also imported in no small quantities. Wages and prices have risen and the margin of profits is already low. In order to help the industry improvements in the processes of manufacture and the use of labour-saving machines are necessary. Power lathes were tried in Moradabad, but without success. The manufacturers of utensils would not send their vessels there for polishing. It appears therefore that either improved hand appliances will have to be adopted present processes improved and moulds better than the existing ones introduced, or fully equipped power factories brought into being. The former course will obviously be preferable, as in that case work will go on in the cottages as at present. In order to carry out these experiments, an experimental demonstration factory is required. The suggestions of the Superintendent are the same as were made by Mr. Chatterjee nearly 15 years ago and a clear inference may be drawn that if this sort of work is left to private enterprise, it will never be done. The necessity for starting a Government factory at an early date is all the more forcibly brought out.

In point of importance stone comes next. Stone worth 5½ lakhs of rupees is exported annually from the district. The quarries belong to Government and are worked on a royalty system. The cost of transportation is against the extended use of stone. The Ganges is not navigable for the whole of the year for stone boats and railway wagons besides being

costly are not available regularly. Lime-stone exists in the district, but transport difficulties prevent the opening of lime or cement works.

The pottery of Chunar is finding work for about 50 men. The total value of the manufacture is roughly about Rs. 20,000 per year. The pottery is famous for its raised leaf and flower patterns and is easily identified by its dark brown colour and glaze. The industry is declining for want of demand. The glaze is of an easily fusible composition and results in a white incrustation on the outside of the vessels on standing for some time; the glaze is not acid proof. The Emporium at Lucknow is doing what it can to advertise the articles, but the transport and packing difficulties add very much to the cost and stand in the way of extension of the sales to any appreciable degree.

Amongst other industries are the silks and wooden toys of Ahraura. Both these can be developed with better organization.

The report is full of indications that forests which afford many products of great industrial value are difficult to explore on account of want of transport facilities. As soon as this part of the district is opened out, timber, lac, silk, minerals and many other minor products can easily be utilised. The report contains a list of minerals and main trees available in the forests. A light railway will do a lot for the development of the district. To sum up, transport facilities will help in the development of the forests, and for the improvement of the existing industries Mirzapur needs at an early date:—

- (1) A school to impart instruction in—
 - (a) designing, with classes suited to the needs of carpet makers, brass workers, patwas manufacturing silks, and the toy manufacturers;
 - (b) dyeing, with particular reference to wool and silks;
 - (c) making of varnishes in order to consume its shellac and command prices;
 - (d) better processes and appliances for brass workers; and
 - (e) improved glazing, colouring and baking of earthenware.

In order that the school may be able to effect all this, it should have small factories attached to it to give practical demonstration of its methods, especially :—

- (a) a brass factory,
- (b) a factory for making earthenware,
- (c) a dyeing factory, and
- (d) a varnish factory.

These factories should be conducted on commercial lines and be self-supporting, but need not be on a very large scale and run for profit making.

(2) Co-operative societies for—

- (a) the purchase of wool, and
- (b) the benefit of the silk workers and toy makers of Ahraura.

(3) Steps to be taken—

- (a) to improve the quality of wool by cross-breeding, and
- (b) to expand the cultivation of lac and silk worm rearing.

The report has been drawn upon lines similar to those published previously, and has been revised by Mr. S. T. Gadre, Industrial Chemist to Government, who has recast a few notes and improved others. Thanks are also due to the following gentlemen who have helped the Superintendent in collecting information :—

Babu Raj Bahadur Lal, Chairman of the Municipal Board.

Mahant Parmanand Giri, M.L.C.

Pandit Shri Sadayatan Pandey of Ahraura.

CHAMPA RAM MISRA.

CHAPTER I.

INTRODUCTION.

1.—General Features of the district.

The district of Mirzapur has an area of 5,233 square miles falling in three great natural divisions :—

- (1) The alluvial plain lying on either bank of the Ganges.
- (2) The table land stretching from the summit of the Vindhyan scarp to the Kaimur range and the valley of the Son river.
- (3) Southern Mirzapur comprising hills, valleys, ravines, crags and forests, " with here and there hill encircled alluvial basins."

Its boundaries are :—

North—Jaunpur and Benares districts.

East—Bihar Province.

South—Sarguja State.

West—Rewah State and Allahabad district.

2.—Population.

The district has a population of 1,071,046 souls giving a mean density of 204 per square mile.

3.—Minerals.

The district is rich in minerals, but owing to the inaccessible nature of the tract where they occur, they have not been exploited with the exception of building and lime-stones. The following are said to occur in the district :—

Felspars or feldspars are usually co-existent in the rocks in the southern area.

Mica of a black or dark brown colour occurs generally in small laminae.

Epidote rock is found in a few places, for example in low hillocks to the south-west of Pokhra.

Marble stone is found in the rocks east of Aundhi.

Corundum occurs just outside the limits of the district in Rewah Singrauli between the villages of Pipra and Kodopni, about 4 miles south of Kota. It is quarried to some extent by Messrs. Mahadeo Prasad Kashi Prasad of Mirzapur.

Lead ores in the shape of galena occur to some extent, about 3 miles west-south-west of Charchari and one and a half miles south-west of Chiraikun in Sarguja. Near the south-west boundary of Mirzapur there is a lead mine which was worked at one time, but is now abandoned.

Beds of iron ore in the shape of magnetite are met with near Koelkat, Korchi on the Pangan river in Dudhi tahsil has the richest mines. In Singrauli there is a considerable supply close to the now abandoned coal mines in the Singrauli basin.

In spite of transport difficulties which will make the material difficult of access, I should suggest that a proper survey of the minerals available in Mirzapur district should be made. If the institution of a regular Geological survey should appear impracticable at least the nature of the different minerals should be ascertained if same has not been done as yet.

4.—Forests.

About 1,537,506 acres of land or a little less than one half of the district is barren, but a greater portion of it has never been surveyed.

The Mirzapur forests appear to be rich in economically useful trees, e.g., pipal used for lac culture, semal noted for silk cotton. If its plantation is regularised and extended it may serve to yield the kapok seed which is coming into use as an oilseed. The wood is an excellent light wood and may serve well where such wood is required, e.g., in ship building or match industry. The silk cotton is liked as a soft stuffing material for mattresses, pillows, etc.

Palas or dhak (*Butea frondosa*) yields flowers which are used as dyeing material.

Bahera, aonla, harra, etc., are the source of useful tanning material.

Shisham, sal or saku, tendu wood (ebony), haldu are trees which yield useful timber, suitable for building and furniture purposes. Tendu leaves are said to be used for *biri* making. The plantation of mahua and bamboo may be profitably encouraged. Bamboo has immense well known uses and is of late coming into prominence as an excellent raw material for paper pulp manufacture. Mahua tree yields the flowers and fruits whose economic uses are too well known to be described the flower is an excellent base for industrial alcohol and such other spirits, the seed for an industrially useful oil. Asan, used for silk worm rearing and khair yields catechu.

Other trees are the bargad, neem, bel, jamun and tamarind, occurring throughout the district and dhoara sidia, salai, parsidoh, bijasal, kahua or arjun and kulu found in the forest area.

5.—Railways.

	Distance.	Stations.
O. & R. Ry.	26	Kapsethi, Parsipur, Bhadohi, Mondh and Suriawan.
E. I. Ry. ...	53	Ahraura Road, Kylaht, Chunar, Dagmagpur, Pahara, Jhingura, Mirzapur, Bindhachal, Birohi, Gaipura and Jigna.
B. N.-W. Ry. ...		Kachwa Road, Katka, Madhosingh, Mirzapur ghat, Chilh, Ahimanpur, Konh Road and Jangiganj.

6.—Roads.

The following are the principal roads in Mirzapur district :—

Metalled roads—

	Miles.
1. The Grand Trunk Road ...	24
2. The Great Deccan Road ...	40
3. The Mirzapur-Jaunpur Road ...	18
4. The Mirzapur-Marhihan Road ...	17
5. The Ramnagar-Ahraura Road ...	19
6. The Mirzapur-Benares Road ...	9
7. The Mirzapur-Gopiganj Road ...	11
8. The Mirzapur-Sitakund Road ...	5

Unmetalled roads—

	Miles.
1. The Chunar-Benares Road ...	7
2. The Marihan-Ghorawal and Robertsganj Road ...	33
3. The Chhota Mirzapur-Tidwa Road ...	4
4. The Ahraura-Robertsganj and Chopun Road ...	38
5. The Chunar-Ahraura Road ...	14
6. The Korh-Durgaganj Road ...	15
7. The Gopiganj-Bhadohi Road ...	12
8. The Chunar-Chhota Mirzapur Road ...	14

Besides the abovementioned metalled and unmetalled roads there are about 600 miles of 5th and 6th class of unmetalled roads, most of which are mere bullocks tracks, more or less passable or impassable according to the season of the year.

7.—Canals.

The principal canals are :—

1. Garai Canal ...	2 miles.
2. Baraundha Canal ...	7 ,,
3. Marwa	
4. Karamnasa ...	52 miles.
5. Ghaghar ...	25 ,, plus 35 miles (branches).

The *patris* of the canals supplement the roads as means of communication.

8.—List of ferries.

River.	Name of Ferry.
Ganges	... Bindhachal
Do.	... Narghat and Sunderghat.
Do.	... Companyghat.
Do.	... Newaria.
Do.	... Bhatauli.
Do.	... Kathnehi.
Do.	... Sindhaura.
Do.	... Turnbullganj.
Do.	... Chunar City.
Do.	... Baluaghat.
Do.	... Jurganadi.
Do.	... Sultanpur.
Do.	... Chhota Mirzapur.

River.	Name of Ferry.
Son	... Silpi and
Do.	... Kota Newari
Do.	... Agori
Do.	... Patwadh Chopan
Do.	... Chopun
Do.	... Kauch
Do.	... Kota Kajarhat
Do.	... Hardi
Do.	... Argarh
Rihand	... Obra
Do.	... Sindhuria.

9.—List of markets.

Tahsil.	Pargana.	Village.	Market days.
Mirzapur	Kantit Tappa	Upraudh Baraundha	... Sunday and Wednesday.
Ditto	... Ditto...	Halia	... Ditto.
Ditto	... Ditto...	Duber Kalan	... Monday and Thursday.
Ditto	... Ditto...	„ Khurd	... Ditto.
Ditto	... Ditto...	Kothi	... Tuesday and Friday.
Ditto	... Ditto...	Pipra	... Ditto.
Ditto	... Ditto...	Dubura Kalan	... Ditto.
Ditto	... Ditto...	Drummondganj	... Wednesday and Saturday.
Ditto	... Tappa Chawraasi	Narghat	... Daily.
Ditto	... Ditto...	Mc Chleryganj	... Do.
Ditto	... Ditto...	Wellesleyganj	... Do.
Ditto	... Ditto...	Durgaganj	... Do.
Ditto	... Tappa Chhianve	Naroi	... Sunday and Thursday.
Ditto	... Ditto...	Bijaipur	... Ditto.
Ditto	... Ditto...	Khamaria	... Tuesday and Friday.
Ditto	... Ditto...	Kaerab	... Ditto.
Ditto	... Ditto...	Bhurupur	... Tuesday and Saturday.
Ditto	... Ditto...	Baharia	... Ditto.

Tahsil.	Pargana.	Village.	Market days.
Chunar	Kayat	Adalpura	... Daily.
	Sikhar		
Ditto	... Ditto...	Khaira	... Sunday and Wednesday.
Ditto	... Ditto...	Sikhar	... Monday and Thursday.
Ditto	... Kantit		
	Tappa		
	Saktesarh.	Rajgarh	... Daily.
Ditto	... Ditto...	Daranagar	... Do.
Ditto	... Haveli		
	Chunar	Sadhupur	... Do.
Ditto	... Bhuli	Adalbat	... Do.
Ditto	... Ditto...	Bhuli	... Do.
Ditto	... Ditto...	Sherwa	... Do.
Ditto	... Ditto...	Jamalpur	... Do.
Robertsganj	Karhar	Robertsganj	... Monday and Friday.
Ditto	... Ditto...	Shahganj	... Sunday and Thursday.
Ditto	... Biji-garh.	Nai Bazar (Bac-haunda)	Tuesday and Saturday.
Ditto	... Ditto...	Ouni	... Monday and Thursday.
Ditto	... Agori	Kon	... Sunday.
Ditto	... Sing-rauli.	Gaharwargaon	... Monday and Thursday.

10.—List of fairs.

Tahsil.	Pargana.	Locality.	Name of fair.	Date.
Mirzapur	Kantit, T. Chaurasi.	Mirzapur	Bharatmilap	Kuar sudi 11th
Ditto	Ditto	Mirzapur	Khicherwar	In Magh
Ditto	Ditto	Mirzapur Bariaghat.	Holi	Chait badi 1st

Tahsil.	Pargana.	Locality.	Name of fair.	Date.
Mirzapur	Kantit, T. Chaurasi	Mirzapur Imambara.	Muharram	<i>Muhar- ram 9th</i>
Ditto	Ditto	Mirzapur Mahantji- ka-Shivala.	Kajli	<i>Bhadon badi 3rd</i>
Ditto	Ditto	Tarkapur	Do.	Ditto
Ditto	Ditto	Loandi	Rashni Muhabir	<i>Kartik sudi 5th</i>
Ditto	Kantit Upraudh.	Garhbarha Raja.	Bhagwati	<i>Every Monday in Aghan</i>
Ditto	Ditto	Kotar	Mahadeoji	<i>Pus badi 13th</i>
Chunar.	Haveli Chunar.	Ramsarover	Ramsarover	<i>In Chait</i>
Ditto	Ahraura	Ahraura	Dasmi	<i>Kuar sudi 10th</i>
Ditto	Haveli Chunar.	Dargah	Dargah Shah Qasim Sulaiman.	<i>Every Thursday in Chait</i>
Roberts- ganj.	Barhar	Barahda	Gauri Shank r	<i>Phagun badi 14th</i>

Besides the above well known fairs, fairs are held on every festival day (large or small) in almost all the important villages.

CHAPTER II.

Description of, and suggestions for the improvement of the various District industries.

1.—Art industries.

Manufacture of gold and silver ornaments.—There are about 250 gold and silversmiths in Mirzapur town alone. It is estimated that about 15,000 tolas of silver and about 250 tolas of gold are annually imported into Mirzapur for the manufacture of ornaments besides some old ornaments which are remelted. There is still a large demand of these in the houses of rich and middle class people at the time of marriages.

The present price of silver is rupee one per tola and of gold Rs. 28-2-0 per tola. Goldsmith charge from Re. 1 to Rs. 3 per tola for making ornaments from gold and from one anna to four annas per tola for silver ornaments. Generally the earning of a goldsmith ranges from Re. 1-8-0 to Rs. 3 per day.

The following are some of the chief silver ornaments:—*Kara, baju, barakhi, panwan, kakani, chagni, pichilia, arsi, anguthi, challa, paijaib, palani, lachha, auntha, and kardhani.*

The following are some of the gold ornaments:—*Hansuli, bali, bala, jhumka, karanphul, anant, jawa, teeka, bendi, kara, baju, barakhi, etc.*

Many of the ornaments are made both of gold and silver and the richer class people use gold and the poorer people content themselves with silver and even white metal.

2.—Building materials.

Stone.—Mirzapur has about 14,000 quarries which are all Government property, the chief being at Mirzapur and Chunar. About 3,000 are worked at present, most of them being at Mirzapur. Government keeps a head office called the Stone Mahal with ten sub-offices.

Income in 1920-21 was Rs. 86,221. Royalty is charged at the rate of one anna six pies per c. ft. of stone quarried.

Stone is quarried both by blasting and wedge driving, mostly by the latter process. Resort is had to blasting only when a very hard rock is discovered, and it is expected that good stone will be found under it. Building stone is generally quarried. Dressing charges are 5 annas to Re. 1 per c. ft., including all expenses of quarrying, loading, carriage, unloading and loading into a railway wagon.

The duty on small building stone (*dhoka*) is Rs. 22-8-0 per 1,000 c. ft., and its cost at Mirzapur is between Rs. 8-8-0 and Rs. 10 per 100 c. ft. The duty on ballast is Rs. 3-12-0 per 1,000 c. ft. and is generally used as road metal in combination with kankar which is found plentifully in the plains, the average cost of which is Rs. 6 per 100 c. ft. stacked on the roadside.

Besides building stone some articles are also manufactured, such as mill stone, potter's wheel and stone vessels, the prices of which vary from Re. 1-8-0 to Rs. 4-8-0 according to the size and workmanship.

The following are the current prices of stone F.O.R., Mirzapur :—

	Rs.
3' × 1' × 1½" ...	36 per 100 c. ft.
3' × 1½' × 1½" ...	50 " " "
4' × 1½' × 1½" ...	70 " " "
4' × 1½' × 3" ...	12 annas per c. ft.
5' × 1½' × 3" ...	" " "
6' × 1½' × 3" ...	" " "
7' × 1½' × 3" ...	" " "
4' × 2' × 3" ...	" " "
5' × 2' × 3" ...	" " "
6' × 2' × 3" ...	" " "
7' × 2' × 3" ...	" " "
2' × 2' × 1½" flooring dressed	Rs. 50 per 100 pieces.
1½' × 1½' × 1½" flooring dressed	Rs. 25 per 100 pieces.

Stone is a bulky material and transport difficulties stand in the way of its extensive use for building purposes. In former days it used to be carried by boats, but now the river is navigable for stone boats during a portion of the year only, and the main transport now is by rail.

Lime-stone is available in Barhar state, in the Kaimoor range in Robertsganj tahsil.

A lime mill or a cement factory would not pay unless and until transport difficulties are overcome. At least a light railway should be laid across the southern portion of the district. Lime is imported from Manikpur and Sutna in Central Provinces. In southern tracts lime is manufactured to a very small extent for use with *pans*. Kankar is burnt for lime in small kilns at some places, but the industry is on a very small scale.

3.—Chemicals.

There are no chemical manufactories in the district of Mirzapur. Common salt used to be formerly extracted from saltish soils in pargana Bhadohi where a village is still known as Nimaksal Lunari. But since the introduction of imported salt which is both cheap and easily available, the local industry has been nearly wholly suppressed.

4.—Food grains.

The following tables shows the area, production and prices of the principal crops of the district during the year 1920-21 :—

Crop.	Area in acres.	Average yield in seers per acre.	Price in rupees per maund.
Rice ...	179,328	400	Rs. 7-8 to Rs. 12
Juar ...	1,397	325	Rs. 4
Bajra ...	1,265	250	Rs. 4-8
Maize ...	30,755	500	Not in stock.
Arhar ...	1,083	350	Rs. 4-4 to Rs. 4-12
Urd and mung	8,835	...	Rs. 7-8 to Rs. 8
Til ...	16,630	140	Rs. 7-8 to Rs. 8
Sawan ...	33,266	...	Rs. 6
Kodon ...	47,075	...	Rs. 5
Mandua ...	1,087	...	

Crops	Area in acres.	Average yield in seers per acre.	Price in rupees per maund.
Wheat ...	37,792	425	Rs. 6-8 to Rs. 8
Barley ...	198,207	525	Rs. 4-8
Gram ...	56,549	360	Rs. 4-8 to Rs. 5.
Masur ...	9,158	...	Rs. 4-4 to Rs 4-8
Linseed ...	9,128	250	Rs. 8-8
Pcas ...	52,746	300	Rs. 4
Kerao ..	15,800	.. .	Rs. 3-10
Sarson ...	1,385	...	Rs. 8 to Rs. 9.
Mustard ...	...	...	Rs. 7
Barre (safflower)	...	...	Rs. 5
Castor seed ...	...	...	Rs. 6

Wheatgrinding.

Mention has already been made of the Radha Krishna Weaving and Flour Mills, Nargahat, Mirzapur. The power available in the mill is utilised for grinding about 80 maunds of wheat a day in addition to its utilisation for weaving. Wheat is bought locally or imported from the Central Provinces and the Punjab. The mill sells flour and also undertakes outside orders. In the latter case it charges 7 annas 3 pies per maund for all sorts of grains. The charges for hand grinding are 10 annas per maund.

Four others smaller mills grind for the public and turn out about 40 maunds a day. The average consumption of ata in the town would be 250 maunds a day. Half of which is mill ata and the other half ground in hand mills. There is no combination among the mill-owners, and when one is closed the rates go up.

Ata is classed 2nd class and wheat 1st class for transport by rail.

5.—Hardware.

Brasswares.

The following are the export and import figures of brass and brassware of the Mirzapur district. The railway figures do not differentiate between new and old brass. It is presumed that the imports consist of new sheet brass, brass ingots and old broken utensils and the exports are manufactured brass, phul (*kansa*) and kaskut utensils. A small quantity of old broken brass utensils is re-exported to Moradabad and other centres of brass industry in the provinces. It is also well known that enormous quantities of utensils are despatched in carts all the way to Gorakhpur and Basti. Traders realize that thereby they save handling charges at two places, and that vessels are not ruthlessly knocked about as they are apt to be under the present system of careless handling on railways.

	Exports.	Imports.
	Mds.	Mds.
Brass . . .	138,121	226,578
Copper . . .	2,457	13,025
Spelter and zinc . . .	1,371	34,207

The manufacture of brass has entirely ceased as cheap foreign material is easily available. Formerly it used to be made by mixing copper scraps and zinc in the proportion of 2 to 1 or $1\frac{1}{2}$ to 1. *Lotas* and *Batulis* are cast by pouring molten metal into earthen moulds.

Thalis, *parats* and *katoras* are made from imported sheet brass. *Thalis* of phul (bell metal) and of kaskut (prince's metal) are manufactured by first melting the metal and then casting it into slabs to be beaten out into the required shape.

Copper *gagras* are made from imported copper.

The Industry gives employment in 150 factories to 5,000 workmen, who are Hindus of all castes, and some of whom come to the town to work from the neighbouring villages. Women are not employed except as coolies.

The margin of profit in this industry is very low, and improvement can only be effected by either organizing it on an extensive scale in factories using power machines or by improving the present furnaces, processes and appliances. The latter will require a long series of experiments. Labour saving machines will have to be selected or devised and demonstration given to the manufacturers. Persons already

in the business will not do this, nor have the capacity—intellectual or financial—to do it. I would therefore propose that Government should start a factory wherein experiments might be carried out in improved appliances and processes of manufacture. Any improved methods which prove successful in the factory may be demonstrated to the artizans.

The factory should also try and popularize lathes, punching machines suitable for the requirements of these people.

The articles made at present are crude in design, bulky and expensive. Cheap aluminium ware and foreign enamelled-ware are replacing these gradually.

6.—Leather.

There is no big tannery in the district. Chamars tan leather for mots (buckets for drawing water) and country shoes. About 1,000 maunds of raw hides and skins are exported to Cawnpore, while tanned leather is imported therefrom for making boots and shoes of English pattern.

Prices are :—

	Price per raw hide or skin.	Price per locally tanned hide or skin.
Bovine hide ...	Rs. 2-8 to Rs. 3-8 each.	Rs. 5 to Rs. 8
Buffaloe hide ...	Rs. 2-0 to Rs. 3-0	Rs. 5 to Rs. 8
Goat or sheep skin.	Annas 10 to annas 14,	Re. 1 to

Re. 1-4. A hide is tanned in 15 days and a skin in 5 or 6 days. Four to 15 hides are tanned at one time. The charges are Rs. 4 per hide and Re. 1 per skin for tanning hides and skins for others.

The following are the uses of the various kinds of hides and skins :—

Tanned.	Use.
Bullock hide ...	... Buckets.
Buffalo hide ...	... Country shoes.
Goat and sheep skins ...	... Lining shoes and upholstery.
Untanned sheep skins ...	... Muffling drums.
Raw camel skins ...	... <i>Kuppa</i> making.

Kuppa making.—Two Chamars of Pathua make *kuppas* used for storage of *ghi* or oil from raw camel skins. Two *kuppas* can be made from one skin which costs Rs. 6. *Kuppas* sell for Rs. 4-8 each.

Number of tanners in the district is 893 or 300 families.

Number of workers in leather goods 1,050 or 350 families.

Estimate of hides and skins which can be tanned at the rate of 15 hides or 35 skins per month are 4,500 hides \times 12 = 54,000 or 10,500 skins \times 12 = 126,000. Slaughter-house figures show that 1,288-cows and calves, 514 buffaloes and 4,821 sheep and goats were slaughtered in a year. The hides and skins are all exported to Cawnpore.

7.—Miscellaneous.

(a) *Fishing.*

The chief source of supply of fish in Mirzapur is from the Ganges and almost all the ordinary species are found in it. Some kinds of fish are also found in the Son and the Belan rivers. The chief species of fish are hilsa, karaunch, bam, gegra, rohu, jhingwa, pathri, gonch, tengra, pahina, sinlai, lotan, dhorka, sal, etc. Nets of various shapes, wicker work traps and hooks and rods are used in fishing. Sometimes wholesale capture is made in tanks by running off the water. In small pools, etc., poisons are also resorted to. Leaves and saps of various poisonous plants are thrown into the water in the evening and in the morning fish are found stupified and are easily captured. The quantity of fish captured by one fisherman in one night is very uncertain, it may vary from 5 seers to several maunds according to the circumstances and the luck of the man. Fishing is generally done in the nights, and dark nights are more suitable for it than moon-lit nights. The principal fishing castes are Mallahas, Keyats, Binds, Pasis and Gonds. Fishing is only a subsidiary occupation in the district and very few people devote themselves entirely to this profession. Last census returned 107 fishermen in the whole district. Fish is also not a principal article of diet for the people here, though the majority are occasional consumers of it.

Regular fishing was once started on a commercial scale in the Ganges near Bisunderpur and Bhogaon by a Bengalee gentleman and about 5 maunds of fish were daily caught and sent to Calcutta packed in ice; but the business on that scale did not prove to be a profitable one, and had to be abandoned.

The chief enemy of fish is the fish eating alligator who lives on fish.

(b) *Jail industry.*

The only industries in the Mirzapur Jail are :—

- (1) Manufacture of cotton pile carpets.
- (2) Making of munj mats.

In the manufacture of carpets cotton yarn of no. 10 counts is imported from Cawnpore at the rate of about Rs. 9 per bundle of about 5 seers. About $2\frac{1}{2}$ seers yarn is required for weaving one square yard of the carpet, which is woven by one man in about two days and priced Rs. 3-8 per seer.

In the manufacture of munj mats, munj is imported from Kashganj (Etah). One man twists 300 yards of munj string in a day which is sufficient for a mat 2' × 4'. It is woven by a man in one day. It sells at the rate of Re. 1-8 per square yard.

From enquiries made by me it appears that after leaving the jail prisoners do not follow the profession that has been taught to them inside the jail as they are unable to support themselves by it, and also because most of them are habitual criminals.

Besides the above there is one country oil *ghani* for extracting oil for jail consumption, and a hand loom. The *ghani* is driven by the prisoners themselves. Three seers of mustard seed are charged at a time and $\frac{2}{3}$ seer of oil is recovered in about 3 hours. The *kolhu* is charged three times in a day and about $2\frac{1}{2}$ seers of oil are obtained in a day by two men.

I think munj mat making should be discontinued as the raw material has to be imported from a long distance, and weaving should be practised on a large scale.

(c) *Lac dye.*

The various uses to which the lac dye is put are not known as almost the whole of it is exported to Calcutta, most probably for shipment abroad. One local use of the dye is that it is used by the women for colouring their feet (known as mahawar), but the quantity used for this purpose is very little.

(d) Shellac.

Mirzapur is practically the only centre of this industry in the provinces. About 1,500 persons are engaged in it.

Imports.	Exports.
257,628 maunds of crude lac ...	165,257 maunds of manufactured shellac.

Crude lac is imported from Manbhum and the adjacent districts of Bihar and to a certain extent from Central Provinces, Berar and Assam; also from Sindh and the Punjab. The forests of Mirzapur yield only a very small quantity. Two crops are gathered (1) in May and (2) in October.

The process of manufacture of shellac from lac is described with great detail in several books, e.g., Lindsay and Harlow's *Lac and Shellac*, and any repetition is therefore not necessary.

Rosin is imported from Canada and mixed with the inferior kinds of lac in order to lower its melting point, but this lac sells at a lower price. Bareilly rosin is not used as it is said to be of inferior quality than the imported one and cannot be manipulated with the same nicety during the various processes of the manufacture.

Button lac set in small round pieces is made out of the inferior qualities of granular lac.

One maund of lac yields 30 to 35 seers of shellac in 7 or 8 hours. Three men work on each furnace at a time.

Principal workman gets Re. 1-4 and the other two 12 annas and 8 annas each for refining one maund of granular lac. About five men and five women are engaged on one furnace for milling, cleaning and washing lac.

Crude lac sells at Rs. 15 to Rs. 40 per maund. Shellac at Rs. 160 a maund. It had risen to Rs. 300 a maund during the war.

The trade at present is on a very unstable basis. Prices fluctuate too much. Supply of raw material is very irregular. A more systematic and extensive cultivation should be undertaken in the province itself to ensure a regular supply. To control foreign prices, a demand should be created for the product at home. The present demand in India is negligible, but if varnish and paint industry were set up it will increase in no time.

8.—Oils.

Oils are extracted in bullock-driven wooden *kolhus* of the ordinary type. There is no oil mill in the district. Mustard, sesamum (til), linseed (alsi), barre (safflower), and mahua seeds are crushed by Hindu *telis* as Hindus do not use edible oils produced by Muhammadan *telis*. Castor and neem are crushed by Muhammadan *telis*. Any Hindu *тели* found crushing them is outcasted.

The *kolhus* are of the ordinary wooden type similar to those used in other parts of the province. From $3\frac{1}{2}$ to 4 seers of cleaned seeds are charged in a *kolhu* at one time and it takes about 3 hours to crush; thus there can be four *ghanis* or charges in 12 hours and about 15 seers of seeds can be 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 28 per cent., while castor and neem yield about 50 per cent. as the outer shells of the last two seeds are removed before crushing.

For crushing seeds for others, a *тели* generally charges 3 annas per *ghani* for edible oils and 2 annas for oils unsuited for edible purposes as their seeds (e.g., castor and neem) take less time for crushing. This is more profitable to the *тели*.

The income of a *тели* family crushing its own mustard seeds works out to 6 annas 9 pies for one *ghani* or charge of the *kolhu* or about Re. 1-11 per day. The cost of keeping a bullock is 6 annas a day. A *тели* family can thus save Re. 1-4 a day. A bullock costs from Rs. 20 to Rs. 40 and a *kolhu* from Rs. 12 to Rs. 15. The *pachhar* or inner lining of the *kolhu* is required to be renewed every two or three months, and the cost of renewing a *pachhar* is Re. 1-10-0. In the case of sesamum, the earning of a *тели* family crushing its own sesamum seeds works out to Re. 1-12-0 per day, in the case of linseed Re. 1-10-0 per day, in case of castor Re. 1-2-0 a day, and in the case barre seeds Re. 1-5-0 per day. Castor cake is generally burnt by the *тели* as fuel. The use of the cake as manure is not known in the district. There are five or six *ghanis* or charges of the *kolhu* in a day for these seeds as these are soft and crush soon.

Four seers of mahua seeds are required for one charge of the *kolhu* and yield $1\frac{1}{2}$ seers of oil.

Neem 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. The extraction of oil from these seeds is easy and quick. The oilcakes are used as manure and not burnt. Castor and neem oils are used in the villages only for lighting purposes. Cotton seeds are crushed only to a very small extent in the district.

The following tables give an idea of the district production, consumption and export or import of oilseeds and oil from the district :—

Table I.

Oilseeds.	Production.	Imports.	Total exports.	Not available in the district.
Area in acres.	Maunds.	Maunds.		Maunds.
26,789	127,860	60,914	Nil.	188,774

Table II.

Total quantity crushed at 4 <i>ghanis</i> a day.	Oil produced at $\frac{1}{8}$ of oilseeds
Maunds.	Maunds.
188,774	62,924

The *telis* are men of limited means and cannot store oilseeds, but have to purchase them from the local markets from time to time at the prevailing prices. It would pay to store oilseeds in season, but due to their pecuniary condition they are unable to do so, and the profit of storage goes to the grain merchants. An oilman's co-operative agency may be able to offer some solution of this difficulty.

9.—Other industries connected with edibles.

The district returned 3,132 halwais in the census of 1911. The halwais of towns only have some trade of importance and make *jalebi*, *imirti*, *balushahi*, *motichur*, *ghiwar*, *pera*, *barfi*,

gupchup, *laddoo*, *khaja*, *khajur*, *khurma*, *papri*, *laktha*, etc. of *ghi*, sugar, flour and *khowa* (solidified milk).

Sweetmeat sell at 12 annas to Re. 1-4 a 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. Country sugar is mostly used. Java sugar is not imported in Mirzapur for this industry.

10.—Pottery.

The census return shows that there are 8,505 Kumhars in the Mirzapur district, but the actual number of workers (potters earthen pipe and bowl makers) is shown to be 3,212 besides 1,007 men who are also partially agriculturists. These potters turn out the usual earthen water pots such as *surahis*, *jhanjhars*, *gharas*, *handis*, *purwas*, cups and saucers, etc., besides tiles of the ordinary country types. No royalty is charged by the zamindars from whose tanks the earth for making potteries is taken, as they buy utensils at rates cheaper than the prevailing ones. A potter generally earns from 6 annas to 10 annas per day.

Four families of Chunar potters make the famous Chunar pottery from two special kinds of clay called *nakti* and *khasi* obtained from tanks two miles from the town. Moulds are used for raised leaf and flower patterns. Flower pots, wall brackets, *huggas* and *chilams*, etc., are manufactured. The process is described in detail in Mr. Dobb's monograph on glass and pottery and need not be repeated here. Glazing and colouring are done by bhattidars who own better furnaces and are fed by potters. Bhattidars have to give advances to potters and get things made to order for their *bhattis*.

The number of workmen is small. So is the demand for articles limited. Pottery worth Rs. 15,000 to Rs. 20,000 is exported annually to Benares, Allahabad and Calcutta. The industry is declining. There is no advertisement. Another difficulty is the bulky and perishable nature of these articles, they are classed VI class at Railway Risk and 4th class at Owners' Risk. The freights have to be reduced before a better export trade can be built.

11.—Textiles.

(A) COTTON.

(i) *Hand-loom weaving*.—Several hand-loom weaving factories have recently started on a small scale. They are not flourishing. Workmen have raised their wages and continue to put forth same amount of output as they did on their old fashioned loom. Several factories, including one of Mahant Parmanand Giri, M.L.O., and another of Pandit Swami Saran at Baraundha, have been closed. The only remedy as against short output and high wages is popularising of the system of piece wages.

(ii) *Piece-goods*.—Octroi figures of the municipality show that piece-goods worth Rs. 1,98,73,679 were imported into Mirzapur during the year ending March, 1921. Goods worth Rs. 13,51,422 were re-exported probably to the interior of the district. Besides this, a portion of the cloth produced in the local mills must have been consumed in the district. The various kinds of cloth that are imported in the district are :—

Mull, Longcloth, Markin, Garha, Drill, Satin Drill, Checks, printed Calico, Tun, Gwarnat, China Pot, Ghalta, Velvet, Flannel, Banat, Pattoo, Japan Silk, China Silk, Assam Silk, Kashi Silk, Serge, Alpaka, Kashmira, Tweed, etc.

(iii) *Spinning and weaving*.—There are two power mills in the district :—

- (1) Sri Ganga Ji Spinning Mills, Limited.
- (2) Radha Kristna Weaving Mills.

(B) SILK.

Silk cocoons from the jungle tracts in the south of Mirzapur are collected by the aboriginal Kols, Bhuyas and Dusadhs and are brought to the Ahraura market for sale. The worms are fed on Asan and Bair leaves and the cocoons are collected during the months of September and November. The November crop is superior and the cocoons are larger and contain more silk. About 3,000,000 cocoons are brought every year. The price of cocoons is Rs. 12 or Rs. 13 per thousand and one thousand cocoons yield about 1½ seers of yarn which is sold at the rate of about Rs. 40 per seer. About half of this yarn is exported to Benares and the other half

as well as the waste silk is woven into cloth, mostly for local consumption. About 25 families of Patwas work in silk in Ahraura. They buy the cocoons, spin silk yarn and weave cloth from it. A Patwa can weave about a yard of such cloth in a day and sell it at Rs. 2 to Rs. 3-8 per yard. A Patwa generally earns about a rupee a day in this industry. About a chatak of yarn is used in a yard of cloth. Two varieties of tasar are manufactured and are locally known as dungri and chena. The industry, however, is declining for want of a proper system of sericulture in the jungles. A system has to be evolved if the industry is to survive. The system of sericulture is described by Mr. D. L. Drake-Brockman, I.C.S., in the District Gazetteer of Mirzapur and no repetition is necessary.

(C) WOOL.

Carpets.—Carpets are made in Mirzapur from the time of Akbar. The ancient centres of Madho Singh and Ghosia in Mirzapur and Bhadohi in Benares State are still maintaining their premier position. They had the advantage of being situated on the Grand Trunk Road by which pilgrims passed in ancient days to Benares, Allahabad and Bindhachal. Carpets used to be made of cotton in those days. Woollen carpets were manufactured for purposes of export. European firms like those of Messrs. E. Hill & Co. and Messrs. Tellery & Co. have now specialized in this aspect of industry. Export trade has increased enormously, better designs have been introduced and carpets of superior quality have begun to be manufactured out of more evenly spun and better dyed yarn. Profits, however, in the business have not maintained their old level. Wages have risen and skilled labour is not available at reasonable rates to feed all the factories. Loom workers have become loom owners. Mirzapur City has about 500 workers, while there are 5,000 weavers in about a hundred villages to the north of the Ganges. Boys, both Hindu and Muhammadan, are apprenticed to the master weavers at the age of 9 or 10 for a period of 2 years. It is then that they develop dexterous use of their fingers.

Ordinarily, carpet weaving is undertaken as an occupation subsidiary to agriculture. There are 3,000 looms in the district. Loom owners pay the workers by piece wage which comes on an average to 12 annas to Rs. 2 a day for

adult weavers and 6 annas to 8 annas a day for boys. Weavers work at their own homes. Women and children help in preliminary processes. Work in factories for wages is not popular and attempts to start big factories, both by Indians and Europeans, have not achieved the degree of success anticipated.

In addition to that produced locally, wool is imported from Agra and Jhansi in Bundelkhand. Accurate railway figures could not be obtained, but those in hand show that 2,158 maunds wool was imported in the year 1920-21. European firms import their raw materials of superior quality from the Cawnpore Woollen Mills and the Punjab. Ninety per cent. of the carpets made in Mirzapur are exported to Europe, Australia and America. Railway figures show that carpets weighing 11,352 maunds were exported in 1920-21. Designs to suit Western tastes are therefore mostly in vogue. The offer of good prices induced an artificial demand, with the result that carpets—good, bad and indifferent, some inelegantly dyed and utilising dead wool—were exported. Prices came down and large number of bales remained unsold in the godowns of Cutler's Street, and were auctioned. This indiscriminate export of carpets of indifferent quality is likely to bring a bad name for Mirzapur carpets.

A trade association or big co-operative store in which the various bigger firms could pool their capital may be able to standardise goods by insisting on quality against price. Trade jealousy is standing in the way of Indian firms combining together. Special facilities are being offered for training in the processes of dyeing carpet yarn in our Dyeing School. Dealers should therefore avail of the training imparted in the school, and should depute their dyers there to undergo a short course of training. Joint purchase of raw materials should be attempted as also joint sale of carpets. At present the weavers are much in the hands of the dealers and owe large sums of money to them. The matter has been brought to the notice of the Assistant Registrar of Co-operative Societies, and he is taking necessary action.

12.—Wood work.

(a) General.

The census returns show that there are 1,373 sawyers, carpenters, turners and joiners in the district. These people

work at the houses of private persons on daily wages, which range from 6 annas to Re. 1 per day. Some of them are highly skilled and never remain idle.

In muhalla Ganeshganj there are several big shops where all sorts of wood such as sakhu, shisham, sagwan, bijasal, haldu, mangoe planks and ballis of all kinds are always kept in stock in large quantities for sale. These timbers are imported from the jungles of Gorakhpur, Iari (near Gomoh) and Bilaspur in Central Provinces and ballis are imported from Midnapur in Bengal.

The following are some of the current prices:—

	Rs.	a.	p.	
Sakhu beams 10' to 12' × 5" to 8" × 4" to 5"	3	4	0	per c. ft.
Sakhu beams 8' to 9' × 5" to 8" × 4" to 5"	3	0	0	„ „
Sakhu beams 5' to 7' × 5" to 8" × 4" to 5"	2	8	0	„ „
Sakhu beams 4' × 5" to 8" × 4" to 5"	2	0	0	„ „
Shisham 4' to 8' × 6" to 18" × 3" to 6"	4	0	0	„ „
Deccan teak (sagwan) 7' to 8' × 6" to 10" × 6" to 10"	3	0	0	„ „
Bijasal 6' to 7' × 8" to 13" × 3"	3	0	0	„ „
Haldu wood 6' × 5" to 12" × 2" to 4"	2	4	0	„ „
Mangoe planks 5' to 6' × 15" × 1½"	5	0	0	per pair.
Ballis about 18' long 4" to 12" diam.				Rs. 3 to Rs. 9 each.

The trees in the neighbourhood of large towns are cut down while young for firewood and charcoal and the neighbouring jungle is being gradually cleared. I would suggest that at least a line of light railway be run across the southern tract of Mirzapur from Ahraura Road through Ahraura, Robertsganj, Chopan and Dudhi, and unless this is done and the transport difficulties removed, it is useless to think of utilising the forests of Mirzapur.

(b) *Wooden toys and lacquered wares at Ahraura.*

About 40 families of wood turners of Ahraura manufacture wooden toys and lacquered wares from korya wood which

is obtained from the jungle to the south of Mirzapur, sold at the rate of 6 annas to Re. 1-8 per score pieces 3' long by 2" to 5" diameter. Usually these people work on their own account. Journeymen workmen when employed are paid at the rate varying from 8 annas to Re. 1-8 per day. Almost all the manufactured articles are sent to Benares. The colour used is manufactured locally by mixing together imported dyes and lac. A major portion of the toys and lacquered wares sold at Benares is manufactured at Ahraura. It is estimated that toys to the value of Rs. 3,000 to Rs. 4,000 are manufactured and sent to Benares annually. The profit in this industry is about 25 per cent. Improvements in this industry can be effected by showing to the workmen articles of superior designs and better workmanship manufactured in other places, and by finding out markets other than the already existing one of Benares.

The articles made at Ahraura are generally *dibia*, *gilas*, *gend*, *phirki*, *piali*, *jhunjhuna*, chess set, *Chausar goti*, wall pegs, etc.

The prices of *dibia*, *gilas*, *gend*, *phirki*, *piali*, *jhunjhuna*, etc., are as follows :—

Small size Re. 1 per 100.

Large size Rs. 2 ,, ,,

Prices of chest sets are 3, 5 and 6 annas per set.

,, ,, *chausar goti* 16 in a set, 2 annas and 3 annas per set.

Wooden wall pegs are sold at 8, 10 or 12 for a rupee.

Toy swings 12 annas and Re. 1 each.

One man can turn out from 75 to 250 toys in a day according to their size and he earns from 12 annas to Re. 1-8 a day according to his skill and labour. A few workmen do manufacture other things also to supplement their income. I think there is ample scope for a small capitalist to come in and there will be no difficulty in the way.

CHAPTER III.

STATISTICS.

1.—Building material.

*Stone industry.**Raw material—*

Import.—There are no imports in this industry.

Export.

Quantity.—About 1,379,536 c. ft.

Place of consignment.—To Calcutta and almost all the chief towns of Bengal and Bihar and the eastern districts of these provinces.

Value.—Worth about Rs. 5,51,814.

Local use.—Very little.

Manufacture.—On a small factory basis.

Capital.—From Rs. 2,000 to Rs. 10,000.

Labour.—Available locally.

Number of men engaged.—From 25 to 100 men in each works

System of payment of wages.—Wages are paid by piece which works out from 6 annas to Re. 1 per day.

Outturn.—Worth Rs. 5,51,814.

Marketing system.—Goods are sent direct on orders received; in some cases trade agents are also resorted to.

Profit.—Estimated to be about 20 per cent.

What, if any mechanical appliances used.—No mechanical appliances except the ordinary cutting tools, etc., are used.

2.—Food grains.**WHEAT GRINDING.***Import.*

Raw material—

Quantity.—About 24,000 maunds of wheat.

Place of origin.—Mostly from the local market, but also from the Punjab and the Central Provinces.

Value.—Worth about Rs. 1,84,000.

Export.

Quantity.—About 23,500 maunds of flour.

Place of consignment.—Sold in the local market.

Value.—Worth about Rs. 2,35,000.

Local use.—The whole of the flour is consumed locally.

Suggestions for improvement.—The manager complains about the difficulty in getting railway wagons.

Manufacture.—The Radha Krishna Weaving and Flour Mills.

Location.—Situated at Narghat in the heart of the city.

Labour.—Available locally.

Number of men employed.—About 15 men are employed in the milling department.

System of payment of wages.—Daily wages are paid at the rate of 8 annas to Re. 1 per day.

Outturn.—About 23,500 maunds of flour worth about Rs. 2,35,000.

Marketing system.—No middlemen are required to sell the produce as the owner himself is a merchant.

Profit.—About 10 per cent.

Engine.—35 B. H. P. oil-engine, but this is also driving the looms of the weaving department.

Material used (is it exported or local).—Part of the wheat is local and a part of it is imported.

3.—Hardware.**BRASSWARE INDUSTRY.***Import.*

Raw material—

Quantity.—About 273,610 maunds.

Place of origin.—New sheet brass and brass ingots mostly from Bombay and old broken utensils from almost all over the

provinces, some from Bengal, the Punjab and Central Provinces and a little from other provinces as well.

Value.—Worth about Rs. 1,09,44,400.

Export.

Value.—Worth about Rs. 85,16,940.

Place of consignment.—To almost all over the provinces, some to Bengal, the Punjab and Central Provinces and a little to other provinces.

Local use.—A portion of the manufactured utensils is also used locally and some exported by bullock carts to the surrounding places.

Suggestions for improvement.—An experimental factory which will afterwards serve for demonstration purposes is suggested. Railways may be moved to remove the difficulty of getting wagons for exporting finished materials which is generally experienced by the dealers. The dealers also complain that the railway should change their risk note and carry their articles at railway risk to ensure reasonable care being taken of consignments during transit.

Manufacture.—Small factories, about 150 in number.

Working capital.—From Rs. 5,000 to Rs. 1,00,000.

Labour.—Available locally and workmen come to work from places even 4 or 5 miles away from the city.

Number of men engaged.—From 15 to 200 men employed in a factory.

System of payment of wages.—Wages are paid by piece system and it works out to from 8 annas to Re. 1 a day for ordinary workmen, and I am told that some of the best skilled workmen even Rs. 2 a day.

Outturn.—About 177,436 maunds outturn.

Profit.—The profit in this industry I am told is hardly 5 per cent.

Marketing system.—Dealers come from different places and make purchases by advancing a portion of the price and the rest they pay with interest from their sale-proceeds. Some times they make purchases by letters as well.

What, if any, mechanical appliance.—No mechanical appliances except the ordinary cutting tools, etc., are used at present.

Bell metal—

- (a) There are about ten factories here for making bell metal utensils.
- (b) The price of the raw metal is about Rs. 80 per maund of 48 seers, and the price of finished articles is Rs. 110 per maund. Wages are paid by piece work 8 annas to Re. 1.

4.—Leather.*Import.**Raw material—*

Quantity.—About 321,480 bovine and buffaloe hides and about 750,120 goat and sheep skins.

Place of origin.—Obtained locally.

Value.—Worth about Rs. 13,66,290.

Export.

Quantity.—About 80,370 mots.

Place of consignment.—Azamgarh, Jaunpur and other neighbouring places.

Value.—Worth about Rs. 7,23,330.

Local use.—About three-fourths of the total hides and skins are used in the district only.

Manufacture.—Household industry.

Number of men employed.—About 1,500 persons engaged in it.

Wages.—Generally the chamars do their own work, but sometimes when they work for others they are paid by piece work at 8 annas to 12 annas per day.

Outturn.—Worth about Rs. 26,79,000.

Marketing system.—Merchants come personally from the various places and purchase goods for cash.

Profit.—About 30 per cent.

5.—Miscellaneous.**SHELLAC INDUSTRY.***Import.**Raw material—*

Quantity.—About 257,628 maunds a year.

Place of origin.—From Umaria, Barabhum, Mankhera, Karwi Road and Pindra Road in Bihar; Katni, Jubbulpore and Sutna in Central Provinces; Chota Udaipur and Mirpur Khas in Hyderabad; Jalandhar in the Punjab; and a little from these provinces and Assam.

Value.—Worth about Rs. 1,41,69,540.

Export.

Quantity.—About 165,257 maunds a year.

Place of consignment.—Mostly to Calcutta for shipment.

Value.—Worth about Rs. 2,47,88,550.

Local use.—Very little, almost negligible.

Suggestions for improvement.—Systematic cultivation of lac and creating an industrial use of it in the provinces by pioneering a varnish factory.

Manufacture.—Small factories, about 80 in number.

Capital.—From 2,000 to Rs. 40,000.

Labour.—Available locally. Men come to work from places 5 to 7 miles away from the city.

Number of men engaged.—From 10 to 200 men in each factory, on the whole about 15,000 men and women.

System of payment of wages.—Payment is by piece system.

Annual outturn.—About 165,257 maunds worth about Rs. 2,47,88,550.

Profit.—Estimated to be about 25 per cent.

Marketing system.—Selling through trade agents in Calcutta.

Machine.—Hand milling machines are employed in some factories.

No advertisement is made, but the article is sold through trade agents in Calcutta.

The condition of the trade is unstable and the prices fluctuate too much.

6.—Oil.

Import.

Raw material.—

Quantity.—About 60,914 maunds of oilseeds.

Place of origin.—Mostly from Central Provinces, Bihar and Orissa and from other parts of the provinces.

Value.—About Rs. 3,65,484.

Export.—Oil is not exported from this place as there are no big mills here for crushing the seeds on large scales.

Local use.—Almost all the oil extracted in country *kolhus* is consumed locally.

Suggestions for improvement.—The dealers are complaining about railway difficulties in not getting their goods in time due to the shortage of wagons.

Manufacture.—Household industry.

Number of persons employed.—About 5,522 persons engaged in it.

System of payment of wages.—Wages are paid at the rate of 3 annas per *ghani* or charge of the *kolhu* for edible oils and 2 annas for other oils. There are about 4 or 5 *ghanis* or charges of the *kolhu* in a day.

Outturn.—About 66,258 maunds of oil.

Marketing system.—The oils are sold at the shops and sometimes they are also exchanged for food grains in the villages.

Profit.—The income of a *teli* family works out to Re. 1-2 to Re. 1-12 per day.

Suggestions for improvement.—I think the *telis* would do well by adopting the co-operative system of work which will help them in the joint purchase of their raw materials and the joint sale of their finished products.

7.—Pottery (Chunar).

Import.

Raw material—

There are no imports in this industry, excepting a few maunds of colouring material from Calcutta.

Export.

Quantity.—About 4,000 maunds.

Place of consignment.—Benares, Allahabad, Calcutta and to other chief cities on this side.

Value.—Worth about Rs. 20,000.

Local use.—Almost negligible.

Suggestions for improvement.—Railways should reduce the freights on these and carry them with greater care. Better designs should be introduced.

Manufacture.—Household industry.

Number of men engaged.—About 50 men in all.

Wages.—Generally the work is done by the family members and only in rare cases outsiders are employed, and that also only for extra work such as carrying materials, etc., at 4 annas to 6 annas per day.

Outturn.—About 4,000 maunds worth about Rs. 20,000.

Marketing system.—Dealers come from Benares, Allahabad, Calcutta and other cities and make purchases personally.

Profit.—About 50 per cent.

8.—Textiles.

(i) CARPET INDUSTRY.

Import.

Raw material.—Wool.

Quantity.—About 2,158 maunds of wool.

Place of origin.—Agra, Cawnpore, Bundelkhand, Jhansi and the Punjab.

Value.—Worth about Rs. 4,31,600.

Export.

Quantity.—About 11,352 maunds of carpets.

Place of consignment.—Mostly to Calcutta for shipment.

Value.—Worth about Rs. 14,19,000.

Local use.—Almost negligible.

Suggestions for improvement.—Weavers should be taught the correct use of the imported dyes and the quality of the carpets should be standardized by large dealers. A dealers' association should help much in the latter.

Manufacture.—Cottage industry.

Number of persons employed.—About 5,500 persons engaged in it.

System of payment of wages.—Wages are paid by piece which works out from 12 annas to Rs. 2 per day for adult weavers and 6 annas to 8 annas for boys.

Outturn.—About 11,352 maunds.

Marketing system.—Some firms have their agents in London, but goods are also sold on orders received direct.

Profit.—The profit in this industry is estimated to be 15 per cent.

(ii) COTTON MANUFACTURES.

(A) *Yarn.*

- (i) 13,000 spindles in the local mill.
- (ii) Consumption is 20 bales of 5 maunds each per day (25 working days in a month).
- (iii) About 225 maunds a year consumption for purposes other than spinning.
- (iv) Hand spun cotton about 50 maunds a year.
- (v) Only one spinning mill.
 - (a) Working capital between 4 and 5 lakhs of rupees.
 - (b) 500 men employed.
 - (c) About 75 maunds of yarn produced per day.
 - (d) From counts 5 to counts 20 spun.
- (vi) Above counts 40, import about 5 maunds a day.
- (vii) From 5 counts to 20 counts, export about 4½ maunds a day.
- (viii) Consumption in local weaving mills about 15 maunds a day.
- (ix) About 60 maunds of yarn per day are available for handlooms if there be no exports.

(B) *Weaving.*

- (a) There are two mills here.
- (b) All kinds of cotton cloths are produced.
- (c) Wages of skilled workmen Rs. 20 to Rs. 60 per month, and those of unskilled workmen 6 annas to 8 annas a day.
- (d) Exports are worth about Rs. 13,51,422-4-0 annually.
- (e) Imports are worth about Rs. 1,98,73,679 annually.
- (f) About 124 men are engaged in the weaving departments of the two local mills.
- (g) The average price of cloth is 8 annas 9 pies per yard.

(C) *Hand-looms.*

- (a) About 40 looms.
- (b) About 400 yards worth about Rs. 216-4-0 produced daily.
- (c) No. 20 counts mill yarn is used.
- (d) Hand spun yarn is very little used at present.

(iii) COTTON SPINNING.

(a) General.

Import.

Raw material.—Cotton.

Quantity.—About 30,000 maunds annually.

Place of origin.—Bombay, Central Provinces, Rajputana and the Punjab.

Value.—Worth about Rs. 12,00,000.

Export.

Quantity.—About 22 500 maunds of yarn.

Place of consignment.—Patna, Gya, Shahabad and other places in Bihar.

Value.—Worth about Rs. 16,20,000.

Local use.—Local use almost negligible as the yarn is of too low counts to be used by the local weaving mill.

Suggestions for improvement.—Mr. Mitchel, the Manager of the Shri Gangaji Spinning Mills, complains about the railway difficulties in not getting goods in time due to the shortage of wagon supply.

Manufacture.—Big factory, i.e., Power Mill. The Shri Gangaji Spinning Mills, Ltd.

Location.—Situating on the Mirzapur-Sitakund Road 4 miles from the railway station.

Labour.—Available locally.

Number of men employed.—About 500 men employed.

System of payment of wages.—Wages are paid by piece at the rate of 8 pies per pound of yarn spun.

Annual outturn.—About 22,500 maunds worth about Rs. 16,20,000.

Marketing system.—Goods are sold through local agents.

Profit.—Last year they paid a dividend of 8 per cent.

What, if any, mechanical appliances.—350 H. P. steam engine.

(b) Shri Gangaji Spinning Mills, Ltd.

Capital 4 to 5 lakhs of rupees.

Spinning.

Number of spindles.—13,000.

Consumption of cotton.—20 bales of 200 seers per day in a month of 25 working days.

Production.—75 maunds yarn of 5s to 20s.

Place of import of cotton.—Bombay, Central Provinces, Rajputana, and the Punjab.

Price of cotton.—Rupees 40 per maund.

Price of yarn.—Rupees 9 per bundle.

Number of men engaged.—500.

Weaving.

Number of men.—800.

Number of looms.—40, made by Messrs. Dixon and Butterworth.

Engine.—350 H. P. steam engine.

Wages.—Paid on piece system average one anna six pies for spinning and 3 annas for weaving per seer. A man can earn 12 annas to Re. 1-4-0 a day.

Outturn.—Markin is woven and sold at Rs. 24 per piece of 41 yards.

(iv) COTTON WEAVING.

(a) General.

Import.

Raw material.—Cotton.

Quantity.—About 1,340 maunds of yarn.

Place of origin.—From Nagpur.

Value.—Worth about Rs. 96,480.

Export.—There are no exports as almost the whole of the cloth produced is consumed locally.

Local use.—About 6,000 pieces of 40 yards each or about 1,500 maunds worth about Rs. 1,44,000 are produced annually, but the whole of it is consumed locally.

Manufacture.—Big factories, i.e., Power Mill. Radha Krishna Weaving Mill.

Location.—Located at Narghat in the heart of the city.

Labour.—Available locally.

Number of men engaged.—55 men are employed at present.

System of payment of wages.—Wages are paid by piece at the rate of one anna six pies per pound of cloth woven.

Annual outturn.—About 1,500 maunds worth about Rs. 1,44,000.

Marketing system.—No middlemen are required for selling the produce as the owner himself is a merchant.

Profit.—About 15 per cent.

Engine.—35 B. H. P. oil-engine.

(b) *Radha Krishna Weaving Mills.*

Yarn of 40s to 80s is imported from Nagpur.

Number of looms.—22. Some of Messrs. William and Mills and some of Messrs. J. Dugdale and Sons of Blackburn.

Number of men employed.—55 men.

Engine.—35 B. H. P. oil-engine.

Wages.—Three annas per seer on an average.

Outturn.—A piece of 40 yards is sold for Rs. 19 to Rs. 27. About 20 pieces are woven in a day, besides grinding 80 maunds of wheat. Wheat is bought at Rs. 7-8-0 a maund and flour sold at Rs. 8-8-0 a maund.

(v) *SILK INDUSTRY AT AHRAURA.*

Import.

Raw material.—

Quantity.—About 8,000,000 cocoons.

Place of origin.—From the jungles to the south of Mirzapur.

Value.—Worth about Rs. 36,000.

Export.

Quantity.—About 65 maunds of silk yarn.

Place of consignment.—Chiefly to Benares.

Value.—Worth about Rs. 1,04,000.

Local use.—About half of the yarn manufactured is woven into cloth and used locally.

Suggestions.—Systematic sericulture in the jungles to the south of Mirzapur and in other districts of the province.

Manufacture.—Household industry.

Number of persons employed.—About 50 persons engaged in it.

Wages.—Generally the members of the family work and their earnings work out to about a rupee a day.

Outturn.—About Rs. 2,10,000.

Marketing system.—Traders or their agents come personally and make purchases.

Profit.—About 20 per cent.

9.—Wood industry.

Import.

Raw material.—

Quantity.—About 100,000 c.ft. of wood and timber.

Places of origin.—Gorakhpur, Isri (near Gomoh), Bilaspur in Central Provinces and Midnapur.

Value.—Worth about Rs. 2,50,000.

Export.—There are no exports from here as the whole of the imports is for local consumption.

Local use.—All the wood imported is used locally.

Suggestions for improvement.—If the transport difficulties are overcome a lot of wood can be obtained from the jungles to the south of the district and much of the import from outside can be checked.

Manufacture.—Household industry.

Number of men engaged.—About 1,500 persons engaged in it.

Wages.—Daily wages are paid ranging from 6 annas to Re. 1 per day.

Outturn.—Worth about Rs. 3,00,000.

Marketing system.—There are shops in the city for the sale of timber.

Profit.—About 20 per cent.

CHAPTER IV.

MISCELLANEOUS.

(1) *Tariff schedule for chief articles of import.*

Name of articles.		Duty.
1.	Grain and pulse	2½ per cent.
2.	Methylated spirit	7½ " "
3.	Provisions and oilman stores ...	11 " "
4.	Sugar	15 " "
5.	Salt	Free.
6.	Cigars and cigarettes	75 per cent.
7.	Petroleum	Re. 0-1-6 per gal- lon.
8.	Silk waste and raw silk	11 per cent.
9.	Wood and timber	11 " "
10.	Apparel	11 " "
11.	Arms and ammunitions	20 " "
12.	Motor cars, motor cycles and bicycles	20 " "
13.	Chemicals and drugs	11 " "
14.	Cutlery	11 " "
15.	Musical instruments	20 " "
16.	Aniline dyes	11 " "
17.	Glass and glassware	11 " "
18.	Machinery	2½ " "
19.	Iron and steel	2½ " "
20.	Paper	11 " "
21.	Cotton piece-goods	11 " "
22.	Matches	Re. 0-12-0 per gross boxes.
23.	Agricultural implements	Free.

(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.
1st	... .38	100
2nd	... .42	
3rd	... .58	
4th	... .62	
5th	... .77	
6th	... .83	
7th	... .96	166
8th	... 1.04	
9th	... 1.25	
10th	... 1.87	

General classifications of chief articles of exports and imports.

Commodity.	B.B.	O.B.
1. Grain and pulse ...	... 1	...
2. Methylated spirit ...	... 6	4
3. Preserves ...	... 6	4
4. Sugar ...	... 2	...
5. Salt ...	... 4	...
6. Cigars and cigarettes ...	... 6	...
7. Kerosine oil ...	... 4	2
8. Silk waste ...	... 4	...
9. Silk (twist or thread) ...	... 6	...
10. Wood and timber ...	... 1	...
11. Arms and ammunition ...	... 8	...
12. Motor cars, cycles, etc. ...	... 8	6
13. Chemicals ...	... 8	...
14. Drugs ...	... 4	...
15. Musical instruments ...	... 9	...
16. Cutlery ...	... 6	...
17. Glass (plate, etc.) ...	... 8	...
18. Glass (chimneys, inkpots, etc.) ...	... 6	4
19. Glass (mirrors) ...	... 9	...
20. Glass (broken) 1	...
21. Dyes (aniline and others) 6	4
22. Machinery 4	2
23. Iron and steel 2	...

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	Commodity.	B.B.	O.B.
24.	Paper (bales or bundles) ...	2	...
25.	Paper (in cases) ...	4	...
26.	Cotton (pressed) ...	4	...
27.	Cotton piece-goods (bales) ...	6	4
28.	Matches ...	9	8
29.	Bell metal and bell metal wares...	6	...
30.	Bell metal and brass (scrap) ...	2	...
31.	Brass vessels and cooking utensils	4	...
32.	Bricks and tiles ...	1	...
33.	Flour or ata ...	2	...
34.	Coal, coke and patent fuel ...	1	...

CHAPTER V.

DIRECTORY.

1. List of Banks.

- (1) A branch of the Alliance Bank of Simla.
- (2) The Mirzapur District Co-operative Bank.

2. List of silk cloth manufacturers at Ahraura.

- (1) Bindeshri Singh Patwa.
- (2) Tribeni Singh Patwa.

3. List of Timber merchants.

- (1) Janki Prasad, Ganeshganj, Mirzapur.
- (2) Kanhaya Lal, Ganeshganj, Mirzapur.
- (3) Balicharan, Ganeshganj, Mirzapur.
- (4) Lakshman Das Ram Sunder, Ganeshganj, Mirzapur.

4. List of chief manufacturers of wooden toys and lacquered wares at Ahraura.

- (1) Kedar Kharadi.
- (2) Sharda Kharadi.
- (3) Gopal Kharadi.
- (4) Sarju Kharadi.
- (5) Narain Kharadi.

5. List of the principal stone merchants.

- Messrs. The Bengal Stone Co., Mirzapur.
 „ The Mirzapur Stone Co., Mirzapur.
 „ Hazari Lal Buldeo Dass, Mirzapur.
 „ Mannu Dube & Sheo Shankar Dube, Mirzapur.

6. List of the principal stone quarriers.

- Messrs. The Bengal Stone Co., Mirzapur.
 „ J. C. Banerjee Co., Tikare, Mirzapur.
 „ Lal Singh Kedar Nath Seth, Jhingura, Mirzapur.

Messrs. Abinash Chandra Bhattacharji, Chunar, Mirzapur.

„ Buldeo Prasad Khattri, Ganghat, Mirzapur.

7. List of potters and bhattidars connected with the famous Chunar pottery industry.

Potters—

1. Jhulan Kumhar.
2. Dwarka Kumhar.
3. Mangru Kumhar.
4. Baij Nath Kumhar.
5. Budhu Kumhar.
6. Musai Kumhar.
7. Kandhai Kumhar.

Bhattidars.—

1. Satnarain Kasera.
2. B. Jai Krishna Dass Khattri.
3. Dwarka Kumhar.
4. Baij Nath Kumhar.
5. Shakur Khan.
6. Jhulan Kumhar.

8. List of some of the principal gold, silver and ornaments merchants.

1. Sukhdeo Sarraf, Narghat.
2. Moti Lal Sarraf, Narghat.
3. Hingu Sarraf, Pasarhatta.
4. Nawal Ram Marwari, Bundelkhandi.
5. Lallu Bari, Dhundi Katra.
6. Badri Khattri, Pasarhatta.
7. Santu Khattri, Pasarhatta.
8. Munder Sarraf, Pasarhatta.

9. List of principal goldsmiths in Mirzapur.

1. Beni Sonar, Narghat.
2. Murli Sonar, Narghat.
3. Ganga Sonar, Chetganj.
4. Ram Narain Sonar, Narghat.
5. Panna Sonar, Ganeshganj.
6. Mahadeo Sonar, Ganeshganj.
7. Lallu Sonar, Katra.
8. Panna Lal, Near Town Hall.
9. Chunni Lal, Near Town Hall.

10. List of principal brass ware manufacturers in Mirzapur.

1. Messrs Ganga Prasad Beni Prasad Kasera, Pacca Sarai.
2. „ Ram Dass Basant Lal Teli, Takia Dano Shah.
3. Ram Prasad, s/o Gaya Prasad Teli, Duncanganj.
4. Kandhai, s/o Bansi Kasera, Pokhri Padhia, Duncanganj.
5. Daya Ram Kasera, Imamganj, Durgadebi.
6. „ Bachao Sunder Kasera, Imamganj.
7. „ Nur Sahai Ram Newaz, Imamganj.
8. „ Debi Prasad Deota Prasad, Imamganj, Durgadebi.
9. „ Udai Chand & Co., Imamganj, Durgadebi.
10. „ Shyam Sunder Bania, Pacca Sarai, Imamganj.
11. „ Bhairo Musai Kasera, Pacca Sarai, Imamganj.
12. „ Bindeshri Bhagwati, Kasarhatti, Imamganj.
13. „ Bhagwan Dass Narayan Dass, Kasarhatti, Imamganj.
14. „ Sukhdeo Mahabir Kasera, Imamganj.
15. „ Mahabir Gaya Prasad, Imamganj.
16. „ Mahadeo Ghure Teli, Imamganj.
17. „ Bhagwati Mangal Kasera, Jhanwagarh.
18. „ Sital Ramchander, Jhanwagarh.
19. „ Sita Ram Mata Prasad, Jhanwagarh.
20. Daya Ram Kasera, Jhanwagarh.
21. „ Suraj Prasad Beni Kasera, Kotwali.
22. „ Durga Narotem, Kotwali.
23. „ Mathura Mahadeo, Imamganj.
24. Musai, s/o Chingan Kewat, Imamganj.
25. Sadai, s/o Bhaggan Ahir, Duncanganj.

11. List of principal carpet manufacturers in Mirzapur.

1. Messrs. E. Hill & Co., Civil Lines.
2. „ A. Tellery & Co., Bhadhoi
3. „ Oakley Bowden & Co., Orkaney House.
4. „ Lalta Prasad & Brothers, Duncanganj.

5. Messrs. Rahmatullah & Brothers, Dakhin Phatak.
6. „ Ram Lall Ram Bilas, Bundelkhandi.
7. „ J. Tandon & Co., Wellesleyganj.
8. Sheikh Abdul Karim, Dakhin Phatak.
9. Sita Ram Bhargava, Wellesleyganj.

12. List of principal shellac manufacturers in Mirzapur.

1. Messrs. Bindeshri Prasad Manohar Das, Dakhin Phatak.
2. „ Sital Prasad Baijnath, Badli Katra.
3. „ Sujan Ram Hari Dass, Chikari Tola.
4. „ Mata Badal Shri Narain, Chikari Tola.
5. „ Garib Ram Chedi Lal, Lal Diggi.
6. „ Mannu Lal Bhagwan Dass, Lal Diggi.
7. „ Bali Ram Jokhai Ram, Sobri.
8. „ Radha Rawan, Lal Diggi.
9. „ Ghaus Mohammed Khairuddin, Sobri.
10. „ Lalla Ram Kesho Ram, Lal Diggi.
11. „ Jhangai Ram Narain Das, Lal Diggi.
12. „ Hira Lal Girdhari Lal, Ganeshganj.
13. „ Mathura Prasad Beni Prasad, Dakhin Phatak.
14. „ Bindeshri Prasad Uma Shankar, Ganeshganj.
15. „ Sheo Prasad & Co., Ganeshganj.
16. „ Sital Prasad Misri Lal, Ganeshganj.
17. „ Chakko Ram Bansi Ram, Ganeshganj.
18. „ Bhagwan Dass Baijnath, Ganeshganj.
19. „ Gorakh Mal Ram Rikh, Duncanganj.
20. „ Munsa Ram Gajadhar Lal, Ratanganj.
21. „ Debi Prasad Ram Prasad, Katra.
22. „ Sarju Prasad Shyam Lal, Katra.
23. „ Madan Chand Ganga Dhar, Katra.
24. „ Bal Krishna Jagarnath, Katra.
25. „ Hira Lal Jhaboo Lal, Gosain Tola.
26. „ Basant Lal Kanhaya Lal, Muzaffarganj.
27. „ Kandhaiya Lal Unkar Nath, Muzaffarganj.
28. „ Buldeo Dass Sarju Prasad, Muzaffarganj.
29. „ Mahadeo Prasad Kashi Prasad, Muzaffarganj.
30. „ Aba Dad Imamuddin, Narghat.

-
31. Messrs. Bhairo Nath Mahesh Prasad, Muzaffarganj.
 32. „ Dwarka Prasad Jagarnath, Chetganj.
 33. „ Kilburn & Co., Rokharghat.
 34. „ Bhagwan Dass Parshotem Dass, Badli
Katra.

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

9

Moradabad District

By

RAGHUNANDAN SARAN, M.Sc., LL.B.



ALLAHABAD:

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FOREWORD.

MORADABAD has been famous for a long time for its brass and weaving industries, while Amroha has been the home of artistic work like carpets, embroidered caps, durries, pottery, lacquered ware, etc. That congregation of villages locally called 'sarais', which goes by the name of Sambhal, is another important industrial centre in the district, and though the industries of the place have declined very much, it is still known for its manufacture of horn combs. Sambhal has also some handloom weaving and calico-printing, as well as the remnants of the once important paper-making industry. Chandausi is another place of great industrial activity with its big market for cotton, gram, sann hemp and munj string, its flour mills, cotton ginning and pressing factories and factories where pulses are split. The district can also boast of its rich cultivation of tobacco and potatoes. Some crude saltpetre is manufactured at Tigri and two or three other places and some glass bangles at Mughalpur and Rehri. The largest glass works is at Bahjoi where chimneys are blown in addition to the manufacture of other lamp ware and table ware. This factory gives promise to make a beginning in the manufacture of sheet glass very shortly. Hasanpur, situated as it is in the khadir of the Ganges, has industries connected with the khadir products, viz. munj, khajur, kans, etc., which are used in making ban (string), mats, etc., Darhal is a big market for rice and Chuchaila for leather. Handloom weaving is carried on all over the district, though Amroha, Darhal, Mughalpur, Hasanpur, Thakurdwara, Kanth, Bilari, Paikbasa and Pipal Sana are its main centres, besides Moradabad and Sambhal, of which mention has already been made above.

The manufacture of embroidered caps gives employment to 1,000 souls of Amroha and brings some income to the indigent purdah women. Ladies' associations should be organized, which could undertake the distribution of raw materials and collection

of finished products for sale in some central store. Workers can turn out 100 caps a day; 100 caps are said to consume about Rs. 150 worth of salma, (i.e., about 100 tolas) as well as Rs. 75 worth of kalabatun (viz., about 55 tolas). The wages of the workers thus come to Rs. 100 to Rs. 125 a day, which is divided between 800 to 1,000 persons. The factory owners earn about Rs. 60 a day divided between 50 persons. The workers' wages are very low and an organization of the industry on co-operative lines would benefit poor purdah women a good deal if an outlet can be found for the products. Shells of river and jhil mussels are found in large numbers in this as well as other districts of the province. Bengal uses its river mussel shells in the manufacture of buttons and other similar small articles. The machinery is not likely to be very costly, but may have to be adapted to local needs. If some sort of inexpensive mechanical device could be demonstrated to these cottage workers, whereby manual labour will be reduced and comparatively better and larger output turned out, these humble artisans will be prepared to invest small amounts in the new machine, provided of course, Government undertake to demonstrate to these people the benefit which the new mechanism will bring to them.

A brass factory is badly needed in Moradabad. But to be successful it will have to be self-contained. It should manufacture its own utensils, tin and polish them. The lesson learnt from the failure of the Moradabad Brassware Manufacturing Co. is that the factory owners and hand workers combine against any concern desirous of doing work by power. Therefore the factory should be started with sufficient organization and capital to enable it to send ready-made articles to the market. Attached to it should be a school to impart instruction in designing like the one advocated for Mirzapur. It should be able to give instruction in designs for (a) embroidery, (b) brassware, (c) art pottery, (d) toys and other lacquered articles, (e) papier mache toys and articles, (f) carpets, and (g) cloths. The school should have self-supporting factories attached to it to show the working of its methods.

Co-operative societies for workers in baskets, mats, crates, etc., will not only improve the quantity of produce, but introduce

better and new designs also. One man has been able to organise and put on sound footing the manufacture of crates in Bahjoi. A society will, I think, be able to do a lot, if it gets earnest workers.

The district produces tobacco of good quality to the extent of 20,000 maunds.

Every attempt should be made to supply *ghā* and milk which are the main articles of food in India in a pure state.

A co-operative store for yarn and cloth is the prime necessity of the handloom weaving industry. The store should be able to supply yarn cheap to the weavers and also to help them in slack seasons by advancing money or material on the security of cloth. It should also be able to help the printers by depositing their prints in slack season and advancing cloth on their security. Small wage works should also be opened freeing the weavers to increase their output.

The report has been drawn on the lines of other Industrial Survey Reports which have already been published and has been revised by Mr. S. T. Gadre, Industrial Chemist to Government, United Provinces. We are much indebted to him for the valuable assistance given by him. The following gentlemen have helped the Superintendent in the survey work and our thanks are also due to them :—

Rai Bahadur Chhotey Lal, O.B.E.

Mr. Prem Prasad Khanna of Moradabad.

Soti Bishan Sarup, Esq., M.L.O.

Pandit Radha Kishen Das, M.L.A.

Pandit Sheromani Pandey, Junior Assistant Registrar, Co-operative Societies.

Mr. Ishwar Das Varshanel.

Pandit Mahabir Prasad Misra of Sambhal.

Sahu Battu Lal of Chandausi.

B. Sheo Narain of Amroha.

Nawab Abdul Majid Khan of Hasanpur.

But it would have been impossible to finish the survey of the district within the time in which it has been done without the co-operation of the district staff acting under the orders of Mr. H. E. Walton, I.C.S., Collector of Moradabad, and special thanks of the department are due to him for the assistance given by his staff and for his own personal suggestions.

CHAMPA RAM MISRA.

The 7th April, 1923.

CHAPTER I.

INTRODUCTION.

1. — General Features.

(i) Boundaries—

North.—Bijnor and Naini Tal districts.

East.—Rampur State.

South.—Budaun district.

West.—River Ganges dividing it from Bulandshahr and Meerut districts.

(ii) *Topography.*—Along the western border is the Ganges khadir about 269 sq. miles in area, with its reh deposits, tamarisk bushes, dhak, palm, and babul trees, and grass for thatching and grazing. East of the khadir lie the sandy uplands, known as the "bhur" tract, about 424 sq. miles in area. In almost the centre of the district is the 'udla' tract, which is about 88 sq. miles in area, and has a hard and gritty soil. The south-eastern portion of the district forms the fertile 'katehr' or uplands, 597 sq. miles in area. The north-central part of the district is a heterogenous tract about 403 sq. miles in area. East of the north-central tract is the fertile khadir of the Ramganga, about 173 sq. miles in area, with its valuable grazing grounds and tamarisk bushes; and finally in the north-east of the district is a block of country about 350 sq. miles in area, representing in general a southerly continuation of the Naini Tal Tarai.

2. — Population.

Year.	Population of the district.	Area of the district.	Density per sq. mile.
1921 ..	1,198,653	2,807 sq miles	590

3.—Area.

The total area of the district is 2,307 sq. miles and comprises of the following :—

Barren area.	Area out of cultivation.					Cultivated area.		
	Groves.	Culturable.	Waste.	Others.	Total.	Irrigated.	Unirrigated.	Total.
186 sq. miles.	24	156	..	257	437	69	1,615	1,684

The groves consist of mango trees mostly and in Hasaanpur of bamboos.

4.—Roads.

A.—Metalled roads—

	Miles.
(1) Moradabad-Naini Tal road ...	22
(2) Moradabad-Sambhal road ...	21
(3) Gajraula-Hasanpur road ...	8
(4) Gajraula-Dhanawara road ...	8
(5) Joa-Amroha road ...	4
(6) Moradabad-Chandausi road ...	24
(7) Meerut-Moradabad-Bareilly road ...	52
(8) Small feeder roads, etc. ...	7
Total ...	146

B.—Unmetalled roads—

(a) Second class roads—

	Miles.
(1) Bilari-Seondara-Asafpur road with branch to Rith ...	17
(2) Chandausi-Seondara road ...	10
(3) Chandausi-Anupshahr road ...	18
(4) Sambhal-Bahjoi-Islamnagar road ...	21
(5) Sambhal-Anupshahr road ...	14
(6) Sambhal-Joya road ...	17

	Miles.
(7) Sambhal-Hasanpur road	19
(8) Hasanpur-Rehra road	15
(9) Sherpur-Dhanawara-Amroha Road	22
(10) Amroha-Chandpur road	10
(11) Amroha-Umri-Kanth road	15
(12) Hasanpur-Rajabpur road	11
(13) Moradabad-Bijnor road	23
(14) Mughalpur-Dilari road	8
(15) Sirswan-Bhojpur-Thakurdwara road	21
(16) Thakurdwara-Surjannagar road	11
(17) Thakurdwara-Kanth road	18
(18) Thakurdwara-Burhanpur road	5
(19) Sambhal-Chandausi road	17
(20) Others	18
	810

(b) Third class roads—

	Miles.
(1) Sirsi-Bilari road	10
(2) Hasanpur-Tigri road	11
(3) Thakurdwara-Dilari road	12
(4) Chhajlait-Kanth road	5
(5) Hasanpur-Puth road	6
(6) Amroha-Paikbara road	13
(7) Rajehra-Hasanpur road	20
(8) Chandausi-Sambhal road	12
(9) Surjannagar-Dilari road	15
(10) Moradabad-Mugalpur-Kanth road	10
(11) Hasanpur-Amroha road	6
(12) Bachhraon-Sherpur road	6
(13) Rehra Pohrara-Sirsa road	6
(14) Others... ..	13
	145

5.—Railways.

	Name of line.	Length.	Stations.
		Miles.	
Oudh and Rohilkhand Railway.	Main line ...	34	Mundha Pande, Dalpatpur, Moradabad, Aghwanpur, Matlabpur and Kanth.
	Moradabad-Delhi Branch.	43	Moradabad, Hakimpur, Kaitea, Amorha, Chandnagar, Gajraula and Kankather.
	Gajraula-Chandpur Sian Branch.	15	Gajraula, Sherpur, Bachhraon, Mandi Dhanaura.
	Moradabad-Chandausi Branch.	28	Moradabad, Kundarahi, Raja-ka-Sahaspur, Jarraon and Chandausi.
	Raja-ka-Sahaspur-Sambhal-Hatim-Sarai Branch.	15	Raja-ka-Sahaspur, Sirsi Makhdumpur, Sambhal and Hatim Sarai.
Rohilkhand and Kumaun Railway.	Bareilly-Aligarh Branch.	19	Chandausi and Bahjol.
	Moradabad-Kashipur Branch.	26	Moradabad, Kathghar, Got, Sehal, Pipalsana, Roshanpur and Ali-ganj.
		180	

Tahsil Thakurdwara, southern portion of tahsil Hasanpur and western portion of tahsil Sambhal have transport difficulties owing to the absence of railways and metalled roads. Oudh and Rohilkhand Railway authorities have projected a line from Chandausi to Gajraula via Sambhal and Hasanpur, and Rohilkhand and Kumaun Railway authorities a line from Kashipur (district Naini Tal) to Falagarh (district Garhwal) via Thakur-

dware. The opening of these lines will greatly remove difficulties of traffic in tahsils Sambhal, Hasanpur and Thakurdwara. —

6.—Canals.

Name.	Length	Area irrigated.	Crops irrigated.
	Miles.	Acres.	
Bahalla nadi canal (extension of the Tarai canal system).	17	2,000	Rice, wheat, sugar-cane.

7.—Ferries.

Names of rivers.	Names of ferries.
Ganges ...	Sharpur, Garhmukteshar, Puth, Basai, Farida and Ahar.
Ranganga ...	Daulatpur, Mughalpur, Jami Masjid (Moradabad).
Kosi ...	Darbial.

8.—List of markets.

Tahsil.	Locality.	Days.
Moradabad	Moradabad ...	Sunday and Wednesday.
	Kathghar ...	Saturday.
	Paikhara ...	Do.
	Sarkara ...	Wednesday and Saturday.
	Mughalpur ...	Monday and Friday.
	Mundha ...	Ditto.
	Darbial ...	Monday and Thursday.
	Pipli Naik ...	Wednesday.
	Pipalsana ...	Do.
	Bhojpur ...	Sunday.
	Ronde ...	Do.
Manpur ...	Tuesday.	

Tahsil.	Locality.	Days.
Thakurdwara ...	Thakurdwara (Fateh-ullahganj).	Monday and Friday.
	Dilari ...	Sunday and Thursday.
	Surjannagar ...	Sunday.
	Sharifnagar ...	Saturday.
Bilari ...	Chandausi ...	Thursday.
	Bilari ...	Tuesday and Friday.
	Kundarkhi ...	Wednesday and Saturday.
	Ratanpur-Kalan ...	Sunday and Wednesday.
	Sahaspur ...	Sunday and Thursday.
	Seondara ...	Ditto.
	Mahmudpur ...	Ditto.
	Kaithal ...	Ditto.
	Rith ...	Monday and Friday.
	Narauli ...	Monday and Wednesday.
Sambhal ...	Juratha ...	Wednesday.
	Sambhal Mian Sarai	Monday and Thursday.
	Sarai Tarin ...	Sunday, Wednesday and Saturday
	Rampura ...	Monday and Thursday.
	Hazratnagar Gartu ..	Tuesday and Thursday.
	Bahjoi ...	Sunday and Wednesday.
	Fatehpur Shamshoi	Monday.
	Majhaura ...	Thursday.
	Sirsi ...	Friday.
	Asmauli ...	Saturday.
Amroha ...	Amroha ...	Wednesday and Saturday.
	Nangawan Sadat ...	Ditto.
	Kanth ...	Monday and Friday.
	Didauli ...	Monday.
	Lhuri ...	Tuesday.
	Chhajlait	Friday.
	Rajabpur ...	Saturday.

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Tahsil.	Locality.	Days.
Hasanpur	Hasanpur ...	Thursday.
	Gajraula ...	Friday.
	Dhaka ...	Do.
	Bachhraon ...	Wednesday.
	Rehri ...	Ditto.
	Dhabarsi ...	Ditto.
	Ujhari ...	Ditto.
	Dhanaura ...	Tuesday.

9.—List of Fairs.

Locality.	Name of fair.	Date.
Moradabad	District Industrial and Agricultural Exhibition.	Month of January or February.
	Muharram ...	Muharram 10th.
	Ram Lila ...	Kuar Badi 1st—15th.
Mugalpur	Muharram ...	Muharram 10th.
Paikhara	Ditto ...	Ditto.
Thakurdwara	Ram Lila ...	Kuar Badi 10th.
Muqarrabpur	Sheoratri ...	Phagun Badi 13th.
Birui	Ditto ...	Ditto.
	Ditto ...	Ditto.
Ganeshpur	Ram Naumi ...	Chait Sudi 9th.
	Janam Ashtami ...	Bhadon Badi 8th.
Junatha	Urs ...	Zikar 8th—11th.
Sahaspur	Ram Lila ...	Kuar Sudi 10th.
	Dhaja ...	Chait Budi 2nd.
Sambhal	Pheri ...	Kartik Badi 4th and 5th.
	Nema ...	Chait Sudi 8th.
Sadatbari	Sheoratri ...	Magh Badi 12th—14th.
	Ditto ...	Phagun Badi 13th.
Amanli	Debi ...	Bhadon Badi 1st and 2nd.
	Do. ...	Magh Badi 1st and 2nd.
Amroha	Shaikh Saddu ...	Every Wednesday.
	Phul Bagh ...	Sawan Sudi 6th—12th.
	Nema ...	1st Tuesday of Chait.

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Tahsil.	Locality.	Days.
Amroha (concl'd.)	Shah Wilayat ...	<i>Rajab 19th—21st.</i>
	Giarhawin ...	<i>Rabi-us-sani 11th.</i>
	Chharian ...	<i>Sawan Sudi 7th.</i>
	Chharian ...	<i>Sawan Sudi 5th.</i>
Amroha tahsil	Ditto ...	<i>Ditto 4th.</i>
Amroha Bazar-jat.	Ditto ...	<i>Ditto 3rd.</i>
Amroha, Ahmad-nagar.	Ditto ...	<i>Bhadon Badi 2nd.</i>
Amroha, near Ponad.	Ditto ...	<i>Kuar Badi 10th to Sudi 5th.</i>
Bhojanpur ...	Ram Lila ...	<i>Kartik Purnamashi.</i>
Tigri ...	Ganga Ashnan ...	<i>Every Tuesday.</i>
Hasanpar ...	Mata ...	

CHAPTER II.

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

1.—Art industries.

(i) *Embroidered caps.*

Embroidered caps are made at Amroha. Most of the work is done on satin cloth with *salma* or *kalabatun* (silk thread being used for stitching); cotton, silk or velvet cloth and cotton or silk thread are only occasionally employed. *Salma* is imported mainly from Lucknow (and a little from Surat also), the price being Rs. 1-7-0 per tolas. *Kalabatun* comes mainly from Delhi, the price being Rs. 1-5-0 per tola; and silk thread is obtained at Re. 0-9-6 per tola. Some of the factory owners import their own *salma* and *kalabatun*, while others purchase these from the local dealers.

The industry gives employment to 800 to 1,000 persons, about 200 being males and the rest females. The work is carried on in small factories employing three or four men each, or by *pardah* women at their homes for the factories. Contract wages are paid, and are 14 annas for working a tola of *salma* and 4 annas for working a kalaba of *kalabatun* (20 yards long and $\frac{1}{2}$ tola in weight). A man can thus earn 8 annas or 10 annas a day and a woman 4 annas or 5 annas.

The prices of the caps vary from Rs. 2 or Rs. 15, but mostly caps of intermediate quality priced at Rs. 5 or Rs. 6 are made. These caps find sale mainly amongst *Muhammadas*, and the demand is very high at *Id*. The estimated outturn is about 100 caps daily. Caps are exported to all parts of the provinces in execution of orders. Fringe for saris is also prepared to a

small extent. The daily consumption at Amroha is about Rs. 150 worth of salma and Rs. 75 worth of kalabatun.

The industry is on the decline, because the taste of the people has changed. The khadlar movement dealt it a serious blow by popularising "Gandhi" khaddar caps, but it is recovering from the shock gradually.

Suggestions.—The tastes of the people should be studied and new markets sought. Further expansion is possible by making sari fringes, salma caps for children, artistic ribbons, etc., which would find a sale amongst the Hindus and the Europeans.

(ii) For art brass and art pottery the reader is referred to the notes on hardware and on pottery.

2.—Building materials.

(i) Brick.

The industry of making bricks and tiles is purely local. Patent kilns or "bhattas" are used for making "chowka" bricks which sell at Rs. 16 to Rs. 20 per thousand, while country kilns or "pajawas" are used for making small bricks which sell at Rs. 4 to Rs. 5 per thousand; the tiles are generally made by potters. There are about 12 kilns in the district, the average annual outturn of each being 7 or 8 lakhs of bricks.

(ii) Lime.

About 50,000 maunds of limestone are annually imported from Dehra Dun and burnt into lime in about 30 kilns. Two maunds of limestone cost one rupee and lime sells at Rs. 2-8-0 a maund. Kankar lime sells at annas 10 or 12 per maund, but it has not found favour with the people, hence little kankar lime is used in the district beyond what is required for Government and other public buildings; and this is mostly supplied by the lime-kiln of Messrs. Ford and Macdonald, Limited.

(iii) Pindol and kankar.

Siras Khera (tahsil Moradabad) has a "pindol" quarry and the product is used in the district and outside for rough white-washing. Kankar is available in abundance locally. The

quarries, though found in all parts of the district, are concentrated in Amroha and Bilari tahsils, the greatest being those of Nazirpur, Chandnagar, Hayatpur and Paohak. About 5,000,000 c. ft. kankar is available in the district. Besides supplying the local demand, kankar is also exported to the Bijnor district and to the Rampur State.

3.—Chemicals.

(i) *Saltpetre.*

Tahsil Hatanpur manufactures crude saltpetre to a small extent. Nitrous soil is found to a greater or less extent in many villages of the Ganges khadir, e.g., Biraoli, Rehra, Rehri, Darhel, Patrab, Gangesari, Paurara, Ligri, Shahbazpur, Rathira, and Papsara, the total area being about 80 acres. There are some five small factories in the tahsil for making crude saltpetre.

The season for making saltpetre is November to May. Three men work a factory: one scrapes the nitrous earth, another removes it to the straining bed, while the third looks after the filtration, the boiling, and the crystallization. The weight of nitrous earth treated on one *bhatti* daily is about 10 maunds and the yield of crude saltpetre is about 25 seers. Fuel, in the form of leaves and twigs of trees, is obtained from the waste nearby and costs very little. Crude saltpetre is stored in a pit in the ground. Purchasers from Farrukhabad come twice in a year to buy it. Present price is Rs. 3-8-0 per maund. The price for 25 seers of saltpetre is about Rs. 2-3 and hence the daily earnings per man come to about 12 annas. The royalty paid to the zamindar is Rs. 10 or Rs. 12 for the season. The total amount of saltpetre manufactured annually by one factory is about 80 maunds and the total outturn of the district 400 maunds.

Suggestions.—This quantity could feed a small saltpetre refinery and a capitalist will find the worth of his investment in this business. There is enough demand for refined saltpetre at the United Provinces Glass Works, Bahjoi, which consumes about 1½ or 2 maunds of it every day.

(ii) Reh.

The following is a list of villages where *reh* occurs and the extent to which it is found there :—

Village.	Kankathur.	Usita.	Bijora.	Deorara.	Kudina chak.	Mohamadabad.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Area ...	585	40	123	50	279	37	1,114

Other villages with workable areas under *reh* are :—

Batupura, Satera, Mataina, Fatehpur, Lhari, Desli, Patti Moharka, Khyalipur. All these villages are situated in the Ganges khadir.

The season for collection of *reh* is November to May. The proprietors of large areas like those of Kankathur give an annual lease for the scraping of *reh* while those of smaller areas allow the removal of *reh* on payment of royalty. The lessees are generally people from Moradabad and Rampur. They employ hired labour for collecting it, for carrying it to the Kankathur railway station, and for loading the wagons with it.

Most of the *reh* collected is exported to the Rampur State, the Bijnor district and parts of the Moradabad district. The yearly export comes to about 250 wagon loads (each of 438 maunds) or about 110,000 maunds, worth about Rs. 10,000. *Reh* sells at Rs. 35 to Rs. 45 a wagon load f.o.r. Kankathur, and the lessee has to spend about Rs. 30 per wagon load as the cost of collecting it at the station.

Reh is used locally in curing tobacco, in curing leather, in washing clothes and to a small extent in making dhobie' soap. It should be possible to manufacture locally carbonate of soda and even caustic soda from *reh*, as Dr. E. R. Weston of the Technological Institute, Cawnpore, has shown in an article in the Journal of Indian Industries and Labour (February, 1922).

4. Food crops and other edibles :

(i) (a) *Area under wheat.*

	Acres.
1921-22	... 286,265 (wheat alone.)
	98,209 (wheat mixed with gram or barley.)
Total	... <u>3,84,474</u>

(b) *Total yield of wheat about 3,500,000 maunds.*

There are flour mills in every town of the district, working on commission and doing sufficient work to meet local requirements. These charge 8 annas a maund for grinding wheat. In Chaudansi roller flour mills have been started and an attempt made to seek a market for flour outside the district. The Chaudhty flour-mills, Hira Lal Ram Gopal's flour mills, and the Rustogi flour mills have been supplying flour to the towns of Allahabad, Lucknow, Benares, etc. At present the first two mills have stopped work for private reasons. The Rustogi flour mills export flour to the extent of 60,000 maunds annually. There is still a great field for enterprise in this direction.

(ii) *Dal splitting.*

The total area in 1921-22 under pulses, whether alone or mixed with other crops, was about 212,000 acres, of which about two-third was under arhar, more than one-sixth under urd and moong and less than one-sixth under moth. The total yield of pulses may be taken to be about 1,200,000 maunds.

Splitting of dal for local use is carried on everywhere as a cottage industry, but eight factories in Chaudansi export dal in considerable quantities. Mostly arhar is split there, the chief customers being Messrs. Clement and Company of Lahore (Army contractors) and the dal merchants of Rangoon and Guzrat.

A maund of arhar gives 30 seers of dal, 5 seers of *chuni* (crushed pulse) and 5 seers of *chilla* (husk). The profits for

working a maund of arhar may be roughly calculated as follows:—

	Rs. a. p.		Rs. a. p.
Arhar, 1 maund...	4 0 0	Dal, 30 seers ...	5 1 0
Working expenses	0 13 0	Chuni, 5 seers ...	0 6 0
		Chhilka, 5 seers...	0 4 0
Total	4 13 0	Total	5 11 0

∴ Profit 14 annas.

Out of this profit, rent for the premises of the factory, interest on working capital and supervision charges have to be paid.

The best months for work are April, May and June when the heat of the sun favours the separation of chhilka and the splitting of grain; the application of a little oil (2 chhataks per maund) and then exposure to the sun accelerates this process. In these factories no power of any kind is used, but several labour-saving appliances for working on a large scale have been adopted; they are a hand-worked fan for separating the chhilka, a ghuriya or large sieve placed obliquely down which dal is passed to separate the chuni from it, and another ghuriya or large sieve to separate bigger dal grains from smaller ones. The splitting is done by means of ordinary hand-mills turned by women and the daily consumption is one maund of arhar per hand-mill. The dal is finally polished with soap-stone, after separation from chuni and chhilka. The wages are paid by time: women 5 annas a day, boys 4 annas a day, and men 8 annas a day. The annual export of dal from Chandausi is about 70,000 to 80,000 maunds (9 or 10 thousand maunds per factory). The capital invested in each of these factories is about Rs. 10,000.

(iii) Rice-hulling.

The total area under rice in 1921-22 was about 130,500 acres, and the estimated outturn about 1,500,000 maunds of paddy. The inferior varieties called *salli* and *aujana* are mostly produced.

About 200 Banjara families of Darhial husk rice for export. "Hansraj" is imported from Ramnagar, Bazpur, Chilka Mandi, Fatehpur and other places in the Tarai, and Anjana variety is purchased locally. Rice is exported to Naini Tal and neighbouring places in the plains. Men are engaged in transport and women in husking. A woman can husk 25 seers of rice in a day and thus earn 10 annas. One maund of paddy produces 25 seers of rice and 15 seers of husk. The finer part of the husk is fed to the pack-ponies, the coarser is used as fuel. Hansraj is sometimes separated into several grades (each consisting of grains broken to a particular extent) and rubbed with turmeric and then with wheat flour to give it a polish. About 25,000 maunds of rice are exported annually. The prices are:—

	Paddy.	Rice.	Husk.
	Rs.	Rs.	
Hansraj ...	8 per md. ...	9 to 20 per md.	} annas 8 to 12 per md.
Anjana ...	5-8 ,, ...	10-8 per md	

The workers mostly work at their homes. The work is confined to seven months—November to May.

Mr. Spears and others have put up a rice-buller at Moradabad, while Lala Ram Gopal is arranging to put up another. These will largely meet the public demand for the coarser varieties of rice. It is said that paddy husk is a useful fuel in the glass industry, and it may be possible to establish a connection between the rice-bulling industry and the glass furnaces in this and the Bijnor districts.

(iv) Potatoes.

The area under potatoes in 1921-22 was 1241 acres (about one-third of which was confined to Sambhal alone), and the estimated outturn about 100,000 maunds. Sambhal is especially known for its high yield due to use of horn waste as a fertilizer. Potatoes for sowing are imported from Patna and to some extent from Farrukhabad and Dehra Dun.

No industrial use is made of potatoes in the district, and a starch factory utilizing potatoes as its raw material is likely to do well in Sambhal.

5.—Glass.

(i) *Bangles*.—Five artisans of Mughalpur (tahsil Moradabad) and about an equal number of Rehri and Nagli each (tahsil Hasanpur) are engaged in the manufacture of coarse bangles. Crude glass is imported from Chhabila Sarai (district Bulandshahr) or Akrabad (district Aligarh) at about Rs. 3-8-0 per maund. Some broken pieces of bangles of a superior quality are used, and these are obtained at about 12 seers per rupee.

Each furnace has stalls for 3 or 4 men. The fuel mostly used is tamarisk which is paid for by all men on a co-operative basis. The daily outturn per man is about 1,250 bangles. Prices vary from 12 annas to Rs. 2 per 1,250 bangles.

The daily income of an artisan is 12 annas to Re. 1 as follows:—

(a) Black bangles from country glass—

	Price.		
	Rs.	a.	p.
Crude glass, 1½ seers	0	2 0
Jhau wood, 10 seers	0	2 0
		<hr/>	
Total	0	4 0
		<hr/>	

This gives 1,250 bangles (2½ inches diameter). Price Re. 1. Therefore the profit is 12 annas.

(b) Green bangles from broken bangle pieces—

	Price.		
	Rs.	a.	p.
Broken pieces, 6 seers	0	8 0
Jhau wood, 20 seers	0	4 0
		<hr/>	
Total	0	12 0
		<hr/>	

This gives 1,250 bangles (2½ inches diameter). Price Re. 1-12-0. Therefore the profit is Re. 1. Moradabad district with its

supply of rehs should be able to make its own crude glass. Fuel is available plentifully in the Ganges khadir in the form of 'jhau' bushes and dhak trees.

(ii) *Blown glass*.—The manufacture of glass chimneys is carried on at the United Provinces Glass Works, Ltd., Bahjoi. No factory has two furnaces with 8 crucibles each, each crucible being of 400 lbs. capacity. The quantity of raw materials required daily is about 50 maunds, and the daily production is worth about Rs. 700. The goods are despatched in crates made locally, and about 35 crates leave the factory daily. The factory has agencies at Delhi, Ajmere, Benares, Allahabad and Meerut, but most of the sale is effected through travelling agents. Orders are now received fairly regularly.

The factory has 2 bungalows, 32 quarters for workmen, one library, one co-operative society, one social club, one playground, and one night school. A doctor attends on alternate days, and a compounder daily.

Most of the product consists of lamp globes and chimneys, but some cake-holders, tumblers, etc., are also made. They have got a press also, and press ware in the form of tumblers, dishes and cups, etc., is being turned out. Recently they have imported two engines (each of 60 H. P.) and three blowing machines, and are expecting their window-glass machinery shortly. Lately they have been concentrating upon constructive work.

6.—Haberdashery.

Manufacture of horn combs.—Sambhal is the home of this industry, where 80 to 100 factories exist, each worked with three or four men. Only five or six of these turn out combs of good quality; the rest manufacture only cheap combs. Combs of both the European and Indian styles are manufactured, the latter being occasionally ornamented with gold and silver or brass nails, or pieces of white camel bone or of coloured foreign celluloid combs.

Some of the factories only cut the horns into requisite lengths and straighten and smoothen them, while others cut the teeth and polish the combs, giving them the final touch before they are put into the market. Each factory is worked by members of one family. Outside labour is not much in demand, but when

employed it is paid piece-wages at the rate of 12 annas to Re. 1 for shapening 100 combs or for cutting teeth in 50 combs.

For the process of manufacture the reader is referred to Mr. Chatterjee's "Notes on the Industries of the United Provinces", page 192.

The following gives an idea of the work turned out by each of the two kinds of factories in a day :—

(a) *Shapening the combs (three men at one workshop).*

		Price.		
		Rs.	a.	p.
Horn required 12 seers, ...	...	4	0	0
Charcoal ...	...	0	4	0
Total ...		4	4	0

This gives 300 combs, weighing 6 seers,

$3\frac{1}{2} \times 3\frac{1}{2}$ sq. inches each ...	...	6	12	0
6 seers of horn tips (Rs. 4 per maund)				
and of shavings (Rs. 3 per maund), ...	...	0	8	0
Total ...		7	4	0

Therefore the profit is Rs. 3, and hence daily earnings Re. 1 per man.

(b) *Cutting the teeth (four men at one workshop).*

		Price.		
		Rs.	a.	p.
200 rough combs, weighing 4 seers, $3\frac{1}{2}$ inches \times $3\frac{1}{2}$ inches each ...	...	4	8	0
Total ...		4	8	0

This gives 200 finished combs $3\frac{1}{2}$ seers

in weight ...	...	8	8	0
12 chha'taks of shavings ...	...	0	1	0
Total ...		8	9	0

Therefore the profit is Rs. 4-1-0, and hence daily earnings Re. 1-0-3 per man.

Only buffalo horn is used, and the daily consumption of horn is about 8 or 10 maunds. Horns are imported from the Punjab and Agra and are paid for at Rs. 13 a maund. Eight to ten thousand combs are turned out every day and exported to all parts of the country in execution of orders.

There are about 10 importers of horns and 30 exporters of combs in Sambhal. The importers of horn buy the horn tips and re-export them to Agra, etc. The shavings are used as manure in potato and tobacco fields of Sambhal and are sold at Rs. 3 per maund.

In the present method of manufacture, advantage is taken of the property of horn to bend with heat or cold; horns are cut with hand-saws and straightened by being pressed in wooden horizontal presses and teeth are cut by handsaws and polishing is done by rubbing against pieces of blankets or palms of the hands. Instruction is needed in improved methods of softening and colouring the horns. Improved machinery for cutting and polishing and use of better appliances will improve both the quality and the sale.

7. Hardware.

(a) *Manufacture of brassware.*

Moradabad is famous for the manufacture of domestic as well as art brassware. The domestic ware is turned and polished, while the art ware is engraved and lacquered.

The raw material is:—

- (i) old brass articles which are either purchased locally from itinerant sellers or imported from Delhi, Hathras, Farrukhabad, Mirzapur, etc., and
- (ii) foreign brass ingots.

The price of either is Re. 1-0-6 a seer, and the annual consumption is estimated to be worth about three lakhs of rupees.

The work in sheet brass is considerable and increasing; sheets of European and Japanese origin are imported from Bombay, Karachi and Calcutta at Re. 1-13-0 a seer. The annual consumption of brass sheets is worth about 3 lakhs of rupees.

There are about a dozen firms engaged in the import of raw material.

Seven or eight thousand persons (men, women and children) are engaged in the industry, and the number is on the increase as many persons are taking to the industry as a subsidiary occupation during leisure hours. Women work at home in their spare time, while boys are also part-time workers. There are about 300 small factories, each employing eight to ten men; while 1,500 to 2,000 men are working independently. The daily income of an artisan is about Re. 1 or Rs. 1-8-0 and many earn even upto Rs. 2 a day. The earnings of men are supplemented by those of women and boys, but an artisan family is as indigent as it ever was because men spend money on drinks, etc., as soon as it comes to their hands. The advance system is their curse.

The process of manufacture and the system of work prevalent at Moradabad has been described by Mr. Dampiers in his "Monograph on brass and copper wares of N.-W. P.", and by Mr. Chatterjee in his "Notes on the Industries of U. P." The annual outturn is approximately Rs. 13 lakhs worth of domestic ware and Rs. 2 lakhs worth of ornamental ware.

There are more than 200 dealers in the city who purchase raw material, advance it to the artisans, get back the finished product, and then market it. Out station clientele has become regular. Moradabad dealers visit their customers twice or thrice a year, and their customers visit them as often. In the case of spoons, the manufacture of which has much increased of late, and of ornamental brassware agents are employed who travel with samples to secure orders. The profits of the factory owners are about 1 anna in the rupee, and those of the dealers about 1 anna or 2 annas in the rupee.

Suggestions.

(1) There is already some standardization of Moradabad wares as regards size, quality, and designs, and as the system can be easily perfected, an attempt should be made to evolve and bring into practice a perfect scheme of standardization.

(2) With co-operative purchase of raw material, it should be possible to import brass sheets and ingots directly from foreign countries to Moradabad. This will considerably cheapen their cost, and the dealers should try to organise themselves into an association with this object in view. Some time back a meeting of officials and non-officials interested in the industry was held at Moradabad and it was resolved to give a prize of Rs. 50 to the person who would plan the best practical scheme for the improvement of the industry on co-operative lines. It is possible that some practical and useful result may be achieved.

(3) The general complaint from European markets is that the art brass work suffers from bad shapes, i.e. artistic designs, lack of finish, and over-crowding of work within a small space. The artisans should send some of their boys to the Lucknow School of Arts and Crafts to learn drawing and designing. There is a great field for expansion in the industry and if the workmanship is good, foreign connections can be firmly established, for example an American firm is getting its thermos flask covers artistically engraved at Messrs. C. L. Khannah and Sons, workshop.

(4) There is an annual import of about Rs. 50,000 worth of pressed *katoras* into Moradabad from Poona, Bombay, etc., these are re-exported after being turned or artistically engraved. If such a press could be set up in Moradabad, the product would easily sell.

(5) As suggested by Mr. A. C. Chatterjee in his "Notes on the Industries of U. P.", manufacture of brass lamps could be commenced. I saw very good brass lamps manufactured by Messrs. V. B. Jadeo Pot, Merchants of Old Tambat Lane, Nasik, in the Moradabad exhibition. The example could be followed here. An attempt to manufacture a Diets pattern lantern has resulted in bringing one but at an exorbitant cost of Rs. 12. It was exhibited in the Moradabad Exhibition of 1923.

About two years back a joint stock company, the Moradabad Brassware Manufacturing Company, Limited, was formed with a capital of Rs. 50,000 and polishing of utensils by power lathes

was commenced. The factory wanted to work only for wages, but there was much opposition from the brassware manufacturers and sufficient work was not obtained. Difficulties also cropped up in internal management, and the factory had to be closed. Had the company been formed with sufficient capital to be able to manufacture its own utensils (say by means of a die press), and then tin and polish them, and had it not to depend on outside work only, there is very little doubt that the company would have succeeded.

Messrs. E. H. Qazi and Co., have also set up power-driven machinery for nickel-plating and silver plating by electricity. But they also have started with a small capital of Rs. 10,000 and are working for wages only. Consequently they are not doing well at present. They are sure to do well if they begin to manufacture their own articles and then electroplate and polish them for the market.

Munshi Fida Ali has been granted Rs. 3,500 by Government for effecting improvements in the local brassware industry. He has not started work yet.

(b) *Manufacture of locks.*

Locks are manufactured on a small scale at Dhanaura, ⁹tahsil Hasanpur. There are eight or ten smiths that make locks as well as collect them from the neighbouring villages. The locks are very substantial. The average price of a lock is 14 annas, of which 12 annas is the cost of labour.

8. Leather.

During the year 1921-22, 27,922 cattle and 17,209 sheep and goats were slaughtered in the municipal towns, giving about 45,131 hides and skins. Almost all of these were exported in the raw state, hides to Cawnpore by butchers and skins to Amritsar by Khatiks. The hides and skins meant for export are sent out untanned because the tanners are mostly unskilled, and because many of the European countries as Germany, Austria-Hungary, France, Italy, Russia, etc., restrict the import of dressed or tanned material by the imposition of high protective tariffs.

The cattle census of 1919 returned 806,802 cattle and sheep and goats in the district, which annually supply (assuming an annual mortality of 4 per cent.) about 32,000 hides and skins. These hides and skins are tanned locally for the manufacture of Indian shoes, irrigation buckets, and water-bags etc.

(i) *Tanning.*

Babul grows in abundance in many villages of the Ganges Khadir. Sataira and Mataina, the property of Sabu Teek Chand of Hasanpur have a very large area under babul; a contract is given every seven or eight years for cutting away the babul trees and the contract money is at present Rs. 30,000 nearly. The value of the bark of the trees so removed is about Rs. 12,000 and its weight about 8,000 maunds. The contractors are mostly Punjabis. Local chamars take contracts for smaller areas belonging to other proprietors who allow their trees to be cut at shorter intervals. The annual yield of babul bark in the district is about eight or ten thousand maunds in weight and worth 12 or 15 thousand rupees. Babul bark is used locally for tanning purposes and is also exported to the Bijnor district and occasionally to Cawnpore for similar purposes. The wood is used for making cart wheels, bed legs etc., while the branches and twigs are used as fuel.

The indigenous process of tanning is the same as described by Mr. H. G. Walton, I.C.S., in his monograph on "Tanning and Working in Leather". Bag tanning is the usual practice. The following is the detailed account of expenditure in tanning (at Hasanpur)—

			Rs.	a.	p.
A buffalo hide costing about Rs. 6	...	...	6	0	0
Babul bark about 20 seers	...	...	1	0	0
Lime	5	"	0	4	0
Reh	2½	"	0	0	6
Khari (salt)	½	"	0	2	3
Oil (nim oil)	2 chataks	...	0	1	0
			<hr/>		
	Total	...	7	7	9
			or	7	8
					0
			<hr/>		

The hide when tanned will sell for about Rs. 9. Hence the profit is Rs. 1-8-0. A family can tan 20 hides a month in three turns, its earnings thus coming to Rs. 30.

Chuchaila in tahsil Hasanpur is the biggest market in the district for tanned hides and skins, where about 500 pieces are brought for sale on the market days (every Saturday) not only from this district, but from the neighbouring parts of the Bijuor district also.

(ii) *Manufacture of boots and shoes.*

Country shoes are made for local consumption from locally tanned leather. Shoes of European shape are made in towns to a small extent and for these leather is sometimes imported from Cawnpore. A shoe-maker's family uses six or seven tanned hides (value Rs. 40 to 50) in a month and makes about 40 to 45 pairs of shoes which sell for Rs. 80 to 90. This gives to the family an income of about Rs. 40 a month. Almost no work is done during the rains as the sale of shoes is then very limited. A water trunk (*mashak*) is usually made of a goat-skin, costs about Rs. 4 and lasts for about a year. Some irrigation baskets are made as well.

9.—Miscellaneous Industries.

(i) *Utilization of slaughter house bye-products.*

(a) *Bones.*—There is no local industry utilizing bones, which are collected by low caste men and sold to owners of godowns at Moradabad, Amroha, Sambhal, Chandausi, etc. These owners of godowns export them without cleaning or drying them, to Calcutta or Karachi in execution of orders from Messrs. Graham Company or Ralli Brothers. The annual export is about 40,000 maunds valued at about Rs. 75,000. The prices obtained at Calcutta are about Rs. 80 per ton.

Bone-meal is a good fertilizer and a bone-crushing factory would be a success, especially among the "Baghbans" who are using horn shavings already.

(b) *Fat.*—Fat is used to some extent for a tallowing *ghas* and at Moradabad for making *dhobies* soap, but it is also

largely exported to Calcutta, Karachi, or Agra. The annual export is about 2,000 maunds, worth about Rs. 65,000.

(c) *Guts*.—Cleaned, dried and pressed guts are exported from Moradabad and to some extent from Amroha also. The firms purchasing these are Messrs. Graham Company and Ralli Brothers. The annual export is about 200,000 yards of the value of about Rs. 3,000.

(d) No use is made of blood, hair, hoofs etc.

(ii) *Basket-making.*

The census of 1911 returned 874 men and 382 women as actually engaged in basket-making and similar other industries. 'Jhau' grows plentifully in the Ganges and the Ramganga khadirs and the making of *jhau* baskets is a common subsidiary occupation of the people in the neighbouring villages, the aberias being especially clever in this craft. Other materials utilized to a less extent are *khajur*, mulberry, *arhar*, *dhak*, and *kapas* stalks, bamboo splints etc. Only plain baskets are made to meet the local domestic demand. No attempt is made to manufacture artistic baskets from 'silk,' *moonj*, etc., though the manufacture could be easily taken up by middle class women as a home industry.

(iii) *Mat-making.*

Khajur trees abound in the Ganges Khadir and mats are made out of their leaves by women and destitute old men. The mats are woven in strips 3 inches wide, and sell at 1 anna per square yard. Each woman daily makes 3 or 4 square yards of matting. The leaves cost nothing. The mats are largely exported by local dealers from Gajraula, Bachhraon, and Dhanaura stations to all parts of the district and to the neighbouring hill-station. *Khajur* fans are also made.

(iv) *Crate-making.*

The industry of making crates for packing glass articles has lately sprung up around Bahjoi in Madara, Sultanpur, Dhakari, Marhiya, and Chitanpur villages, having been organised by one Babu Jagannath Pershad of Bahjoi. The crates

are made by villagers at their homes and sold to Babu Jagannath Pershad who supplies them to the United Provinces Glass Works, Bahjoi, and other glass works in the country. The raw material for these crates is 'saintha' and *moonj* and on an average costs 1 anna for 5 crates paid by way of royalty to the owners. Five crates are usually sold for a rupee. Each man manages to make 2 crates per day and each woman one. Winter is the season of greatest activity. Besides supplying the local needs, about 8 to 10 thousand crates are annually exported from Bahjoi.

(v) *Toys.*

The art of turning of lacquered toys is centred at Amroha; they are made of mango wood, and though durable are not elegant. Insignificant as the industry is at present, with better designs and proper organization it is capable of vast development.

(vi) *Chicks.*

Plain bamboo chicks are made in the district jail. Two men work on each chick, 7' X 4'. The daily outturn of the 2 men is 4' X 4'. The price of the chick is 2 annas per square foot. For making 1 chick, about 12 bamboos are required the price being Rs. 3-8-0 a score. A man can split 12 bamboos in a day.

(vii) *Fisheries.*

The census of 1911 returned 1,067 males and 327 females (mostly Musalmans, Kahars, and Mallahs) as actually engaged in the fishing industry. Besides these, there is a large number of those partially engaged in fishing or resorting to fishing as a pastime. The important fisheries of the district are those of the Ganges (as well as the back-waters and pools left behind by it during annual floods) the Ramganga, the Sot, the Ari, the Gangan, and the Kosi, as well as the *jhils* near Sihal, Siras Khera, Puranpur, Chandpur, Kanth, Gumsain, Saindari, Sirsi, Rahtail, Mahmudpur Muafi, Pipli, Seomdara, and Baina Khera.

The chief varieties of fish available are the Mabsur, Rohu, Ginch, Chawl, Bhoor, Souli, Jhinga, Louchi, Katair, Moela, Singi, Singhara, Kairai, Bajaraya, Audawar, Bhadwa and Patra. The fish are sold generally in the local markets at 4 annas a seer and the daily income of a fisherman comes to 8 or 10 annas as the amount of fish caught is 2 or 2½ seers. The instruments used by fishermen are nets or wicker basket traps. The former are usually 5 or 6 yards long and 4 or 5 yards broad and cost about 8 or 10 rupees each, and the latter cost about 5 or 6 annas each. There are no co-operative societies among fishermen, though such societies are greatly needed, as the fishermen are generally poor and ignorant and without co-operation no improvement is possible in their craft. There is a little export of fish from the Jaithal and Rebra tanks (tahsil Hasanpur) and the Mustafapur tank (tahsil Moradabad).

A considerable amount of fresh-water mussel-shell is available which could be used for the manufacture of buttons, bangles, etc., as is being done in Bengal (Dacca). The machinery is not expensive, and a factory utilizing the shells for the manufacture of buttons should pay.

10.—Non-food crops.

(i) *Sugarcane.*

The area under sugarcane in 1921-22 was 41,662 acres, and the estimated outturn about 670,000 maunds of gur. The sugar industry is of considerable importance in every tahsil, but the chief centres of sugar-refining are Moradabad, Chandausi, and Sambhal. The cane juice is either converted into "gur" or partially refined into 'khand.' The indigenous 'khandal' system prevails and there is no modern sugar-refining factory.

The great centre for the export of Khand is Chandausi from where about 1 lac maunds khand is annually exported mostly to the Punjab, the chief months of export being February to April. About double this quantity of shira is exported every year, also to the Punjab.

(ii) Tobacco.

The area under tobacco in 1921-22 was 2,102 acres and the estimated outturn of dried leaves, about 20 thousand maunds. Sambhal is well-known for its tobacco where the baghbans produce a rich crop by the application of horn-waste as fertilizer. It is said that the quality is good; the manufacture of cigarettes is a possible industry to be thought of, as it will possess the advantage of suitable raw material at hand.

11.—Oils.

(i) Crushing oil-seeds.

The area under oil-seeds in 1921-22 was 4,265 acres, of which about one-third was under "duav," less than one-third under rape and mustard, about one-seventh under linseed, another seventh under poppy, and the remainder under "til" etc. The estimated yield of oil seeds was about 22,000 maunds. Separate figures for castor-seed are not available as the plants are almost invariably sown as borders to other crops.

Oil-seeds are crushed in ordinary country "kolhus." Most of the work is done in castor, rape and mustard, and "duav." The area under "til" in the district is only about 70 acres, and the product mostly goes to Jaunpur for use in the perfume industry. Poppy oil sells at 13 or 14 chhataks a rupee and is mostly used in adulterating ghee. No cotton-seed is crushed locally, although about 170,000 maunds cotton-seed is available annually; there is a great field for cotton-seed pressing industry. The prospects have been generally set forth in a note by Mr. A. H. Silver, a former Director of Industries, United Provinces, copies of which can be obtained by writing to the Director of Industries, United Provinces, Cawnpore.

There are no 'mahua' groves, and the little 'mahua' oil pressed out locally sells at the fanciful rate of 6 chataks a rupee; therefore, the soap-makers find it profitable to import it from Delhi at 20 chataks a rupee.

Some 'nim' oil is also produced and sold at 20 chataks a rupee. The demand is small and limited to medicinal requirements.

Should there be at any time a demand for 'nim' oil for making antiseptic soaps, sufficient seed can be collected by proper organization.

About a thousand maunds of castor and mustard oils are annually imported from Dibai (district Aligarh) and about an equal quantity exported to the hills.

Some people at Moradabad (including Messrs Spears and Mohammad Mohsin, vakils) have started a factory with 4 flour-mills, 5 oil-presses (American cage presses with the capacity of turning out 14 maunds of oil daily), an oil expeller, a rice-huller and a steam engine of 50 H. P. It is intended to take up the crushing of cotton-seed in time.

(ii) Soap-making.

A little dhobi's soap is manufactured by 2 Muhammadans of Moradabad town from tallow, lime, and reh which are all available locally. The total outturn is about 300 maunds annually, more than half of which is exported to the hills, and the rest is concerned locally. The cost of manufacture is about Rs. 28 a maund and the wholesale price of soap is Rs. 32 a maund.

There are 8 Hindu manufacturers in Moradabad and one in Sambhal engaged in manufacturing toilet soaps from vegetable oils only. Coconut and mahua oils are imported from Delhi at 14 annas and 12 annas a seer respectively. Soap is made by the cold process and contains much water which it gradually loses. This soap generally sells at 8 annas a seer and is in demand in orthodox Hindu homes. The total outturn is small, hardly coming to 200 maunds in all.

(iii) Perfumes.

There is a fairly large production of 'khas (which is the root of the gandar grass) in the Ganges Khadir; but most of the quantity dug out viz., about 200 maunds is exported to Garhmukhtesar (district Meerut) annually, where it fetches a price of Rs. 15 to 20 a maund. The khas is available in compact areas, especially in the Sherpur waste; and fuel can be had close by in the form

of 'Jhau' bushes and 'dhak' trees. Khas distillation on the spot should pay.

There are 8 or 10 keora plants in Firozpur (tahsil Sambhal) and a little 'keora' water is made there.

Near Sambhal there is a large production of souf (aniseed). It is generally sown mixed with potatoes in about 100 acres. The average production of seed is about 5 maunds an acre, and the price is Rs. 12 to Rs. 16 a maund. Souf water is prepared by 'attars' (Indian druggists) for medicinal purposes.

12. Other industries connected with edible articles.

(i) Dairy-farming.

Cattle census of 1911 returned 120,490 cows, 13,210 she-buffaloes and 224,952 young stock. The district possesses extensive pastures in the Ramganga khadir, the Ari valley, the Ganges Khadir and the western parts of tahsils Sambhal and Amroha. But there is no well-organised dairy in the district and the making of butter ghee is only a cottage industry. Some two years back an attempt was made to form a joint stock company at Moradabad and to start a dairy-farm but the preliminary heavy expenditure scared away the promoters of the company and the company was liquidated a few days after its registration. The demand of the European and Anglo-Indian civil population of Moradabad town for milk and butter is met by the small "Moradabad Civil Dairy" belonging to Mr. Mohammad Husain, as well as by some cottage workers living in the neighbourhood.

The Moradabad Civil Dairy has got 3 cream-separators working one in Tilokpur, another in Unchogaon, and the third in Nawabpura, all in the suburbs of Moradabad town. Milk is purchased at 2 to 3 annas a seer, cream is separated from it, a seer of milk giving about 2 chhatack of cream and the remaining milk is resold in the village at 1 to 2 annas a seer. The separated milk is taken to the Moradabad town and is sold at 2 to 3 annas a seer. In the dairy about 5 seers of cream is prepared daily from 1 maund of milk, and sells at Re. 1 per lb. The demand for cream is small, and it has, therefore, to be turned into butter. The yield of butter is 4 seers from 5 seers of cream, and butter

sells at Re. 1-4-0 per lb. For the supply of milk to the customers the dairy keeps its own cattle, sells milk at +2 annas per lb. In summer there is a considerable demand for butter from the hill-stations.

(ii) *Ghee-making.*

Ghee is manufactured on a large scale in the district, and besides what is used up locally, considerable quantities are exported from Hasanpur and Chandausi, especially from the latter where ghee is collected not only from the district, but also from the Budaun khadir.

The exports are mostly to Allahabad, Benares, Lucknow, Hardwar, Jwalapur and the Punjab. The average annual export from Chandausi is 4 or 5 thousand maunds, the season being November to March. Average prices last year were Rs. 2 per seer. The export from Hasanpur is about a thousand maunds.

(iii) *Bakeries.*

There are three or four of these in every town, and they only supply the local demand, which is considerable in view of the fact that there is a strong Muhammadan element in the population of the towns.

There are 2 persons in Moradabad city who make Hindu biscuits. Their wholesale price is 12 annas a seer and an export trade is developing in the article. At present the total daily outturn of both is about 20 seers of biscuits and about three-fourth of this is exported to and sold at the various railway stations in the neighbourhood. No outside labour is employed by them. The retail price is Re. 1 a seer and the cost of production is about annas 10 a seer. Want of advertisement and the indifferent method of packing stand in the way of expansion of the industry, as the biscuits are good.

(iv) *Fruits.*

The area under groves in the district in 1921-22 was 15,673 acres. The most common tree is the mango for which Amroha is particularly known, magnificent groves of mango trees extending from the town in every direction.

Choubey Shiam Lal, rais of Amroha, is the proprietor of a nursery, the Krishna Garden, from which 8 to 10 thousand mango grafts are annually sent out. The grafts are of about a hundred varieties, and cost Re. 1 to Rs. 2-8-0 each; the export is brisk all the year round except during May, June, December, and January.

The fruits are also exported in considerable quantities. Manufacture of jams and preserves out of these fruits is a line not yet tried in the district and deserves the attention of capitalists, more truly the grove owners themselves, since the new diversion will lend a greater stability to their hereditary trade of fruit selling.

13.—Pottery.

The census of 1911 returned 2,963 men and 1,301 women as actually engaged in pottery. They mostly make earthen vessels of the common red colour, and in all the towns, there is a considerable manufacture of glazed ware. The glaze used is from glass obtained in the form of broken bangles, viz, vitreous glazed; it is applied to pipe bowls (chilams) to saucers, cups and basins commonly used by Muhammadans, and to vessels used for keeping acid substances.

Amroha Art pottery.—The raw material is the tenacious black clay called 'gwalthana,' obtained from a tank named 'jhol' about $1\frac{1}{2}$ miles from the town. Clay of an inferior quality is available in 'Ram Talab' and "Kaintia." The clay has to be dug and stored for whole year during summer months because in the rains and winter, the tanks are full of water.

The process of manufacture has been described in detail by Mr. H. R. C. Dobbs, C. S., in his monographs on the pottery and glass industries in the North-Western Provinces and Oudh. The articles made are statues, brackets, figures of men and animals, fruits, vases, cups, trays etc. At one time the industry was very prosperous and was much patronized by Europeans but the effort to introduce European designs has resulted in crude designs, and, therefore, in a decline in the export of the ware. The Lucknow School of Arts and Crafts could teach the artizans better designing and modelling if they only cared to go there.

There are about 10 families of Hindu kuzagars engaged in the industry. Women afford great help in the various processes. Each family prepares wares of the value of about Rs. 30 or Rs. 35 a month, out of which the cost of raw materials hardly comes to Rs. 2. The annual outturn of Amroha art pottery is about Rs. 4,000 worth. Large stocks are taken to the fairs at Meerut (Nau Chandī) and Kashipur (Chaiti) and also to the neighbouring cities on the Diwali festival. Some sale is also effected locally.

14.—Textiles.

(a) Cotton.

(i) *Cultivation.*—The variety of cotton grown in the district is known in trade as "Bengal", "fully good" or "fine (grade 6 or 7)". The former has a staple $\frac{1}{2}$ to 1 inch long and the latter $1\frac{1}{2}$ inch. The area under cotton in 1921-22 was 48,054 acres, of which 44,163 acres were sown mixed with arhar. It is estimated that the yield was 240,000 mds. kapas. The average prices were :—

				Rs.	a	p.
Cotton-seed at..	..	..	..	4	8	0 a md.
Kapas ..	..	..	..	18	0	0 " and
Cotton lint ..	..	..	..	40	0	0 "

The season usually lasts from October to January.

(ii) *Ginning and pressing.*—Chandausi is the centre for power ginning and pressing. Most of the cotton ginned there is pressed for export. There are 11 ginning factories (with 662 gins in all) and 8 presses all driven by steam. In 1921-22 nearly 8,500 bales of cotton were ginned and pressed; the business has declined of late owing partly to the unfavourable seasons, resulting in low production of cotton and partly to the growing competition of ginning factories at Kashipur, Rampur, Babraia etc. Cotton comes from the district as well as from Bijnor and other neighbouring districts. All the factories work on commission and gin at Rs. 3 per md. of lint and press at Rs. 7 per bale. A gin turns out about 5 mds. of lint daily. The bales are 49" × 18" × 20" (or 10·20 c.ft.) and weight 400 lbs. each. Sufficient work is not available for all the ginning and

pressing factories, and as an understanding has been arrived at according to which the working expenses are deducted from the total gross income of all the factories, and the profits are divided amongst them all according to their respective capacities irrespective of the actual work done by any particular factory ; while the working expenses have been fixed at Rs. 2-8-0 for ginning out a maund of *ruis* (cotton lint), and Rs. 5-6-0 for pressing a bale. The exporting firms of which there are five in Chandausi mostly purchase " kapas " in the local market ; they seldom have to go to other markets. Occasionally a " beopari " purchases " kapas " on his own account has it ginned and pressed and then sells it to the exporting firms ; rarely does he export it himself to Bombay, which is the seaport of export, the destination being Japan and to a limited extent Switzerland, England, Germany, etc. Railway freight from Chandausi to Bombay is Rs. 2-12-3 per maund R. R. No export duty is levied.

A certain amount of hand-ginning is also carried on in villages to supply cotton for hand-spinning or for stuffing winter clothes. Census of 1911 returned 743 women as engaged in this industry, and these could, at the rate of 6 seers of ginned cotton per worker daily, turn out about 10,000 mds. in a season of 3 months.

(iii) *Cleaning and spinning.*—There is a spinning mill at Moradabad, called the Moradabad Spinning and Weaving Mills Company, Limited. It cleans cotton and spins yarn, but does not weave cloth. Ginned and pressed cotton is usually obtained from the Punjab (Kasur, etc.) The annual consumption is about 20,000 mds. and the average price paid for cotton last year was Rs. 32 per md. The company has 10,080 spindles, and spins $12\frac{1}{2}$ to $14\frac{1}{2}$ counts usually, and $16\frac{1}{2}$ to a limited extent. The annual outturn of yarn is about 3,600 bales of 5 mds. each. The yarn is sold on a system of forward contracts to the yarn merchants of the district, the biggest purchaser being Lala Mathura Das of Kanth. The yarn is almost wholly consumed by the handlooms of this and the neighbouring district. The company has for its labourers 118 quarters and a dispensary.

Cotton used for stuffing winter clothes and for hand-spinning is cleaned by "dhunas" of whom there were 2,372 in 1911. The daily outturn of a man is 3 seers.

Hand-spun yarn is required by cloth-weavers (who also use mill-yarn) and by carpet weavers. In 1911 there were 10,768 females engaged in cotton-spinning, sizing, and weaving.

(iii) *Weaving*.—There are no power-looms in the district; Rai Bahadur Chhotey Lal and others have formed a joint-stock company, to be called the Moradabad Cotton Mills Company, Limited, for power spinning and weaving. The company is busy selling shares, and work has not yet commenced.

There are 8 handloom factories in the district. That of Pandit Murari Lal of Sambhal will be found described in chapter IV, other factories are working on similar lines.

The census of 1911 returned 15,629 men as engaged in weaving. The chief centres are Moradabad, Sambhal, Thakurdwara, Kanth, Bilari, Paikhera and Pipalsana, while less important are Amroha, Darhial, Mughalpur, Ratanpur and Hasanpur. There are about 4,000 looms in the district of which 400 or 500 are fly-shuttle pit-looms. The weaving schools of Moradabad and Sambhal have exerted great influence in popularising fly-shuttle looms and these looms may be seen working in considerable numbers at the places which could come under its influence. Females help in warping and sizing. The annual consumption of yarn is about 38,000 mds. (at the rate of $1\frac{1}{2}$ seers per loom per day, there being 250 working days in a year) of which about 8,000 mds. is hand-spun and the rest mill-yarn. The annual production of cloth is about 44,000 mds. worth about Rs. 42,50,000. Moradabad produces good checks and stripes, towels, twills and dhotis, while Hasanpur is famous for its dotai and dosuti. The warp is generally of mill yarn, and the weft of hand-spun yarn. Sizing is done with wheat flour. For inferior clothes the weavers dye yarn themselves or get it dyed by the professional dyers but for superior kind of stuff ready-dyed yarn is imported. The daily income of a weaver family is about Re. 1-4-0 to Re. 1-8-0. The weavers purchase their own yarn and market the produce themselves. About

three-fourth of the cloth manufactured in the district is brought to Moradabad and sold to the firms that export it, mostly to the Punjab, at a profit of Re. 0-1-6 or Re. 0-2-0 per rupee. The remaining cloth is utilized by the calico printers or is consumed locally. Moradabad is also the collecting and exporting centre for cloth manufactured in the surrounding tract of country, as Bijoor, Budaun, Rampur, etc.

Suggestion.—With small co-operative stores for the supply of yarn, and an extended use of fly-shuttle looms, the industry is capable of vast development.

(iv) *Manufacture of niwar.*—There are 8 or 10 families at Moradabad engaged in the manufacture of niwar and ropes of cotton. Hand-spun yarn prepared from cotton taken out of worn-out winter clothes is purchased at 12 annas a seer. The daily outturn per man is 1 seer or 1 seer 8 chhataks of niwar. About 25 yards to 35 yards of niwar go to make a seer and the prices are Re. 1-4-0 to Re. 1-12-0 a seer. A family earns about Re. 0-12-0 to Re. 1 per day.

(v) *Durrie-weaving.*—Moradabad city has about 60 looms for durrie-weaving, with 2 artizans to a loom. Better class durrries are made in the district jail also. The durrries are either white or striped, the stripes being a series of white and blue, or light blue and dark blue. Yarn spun out of waste cotton is purchased at Re. 0-12-0 to Re. 1 a seer and given to women (Kotvaris) for opening who are paid 2 annas a seer. Dyeing is done by professional dyers who charge Re. 1 for dyeing $1\frac{1}{2}$ or 2 seers of yarn dark blue or 3 or 4 seers of yarn light blue.

Usually the artizans weave durrries on their own account but work is done on commission also, the charges in the latter case being 8 annas a seer for white, 12 annas a seer for white and blue striped, and Re. 1 a seer for durrie which is striped light blue and dark blue. The usual size of a white durrie is $2\frac{1}{2}$ yard \times $1\frac{1}{4}$ yard, and weight 2 to $2\frac{1}{2}$ seers. This is sold at Rs. 2-8-0 or Rs. 3. The daily outturn per loom is about 2 such durrries, and the daily wages come to $1\frac{1}{2}$ annas per man.

The weekly outturn is about 500 durries, weighing about 30 maunds.

(vi) *The manufacture of cotton pile carpets is described with woollen pile carpets under wool.*

(vii) *Printing.*—The census of 1911 returned 1,439 persons engaged in dyeing, bleaching, printing, preparation and sponging of textiles. The cloth to be printed is mostly the handwoven cloth of local manufacture and synthetic dyes are used. There is one family in Sambhal and one or two in Moradabad engaged in block-making. The important centres of cloth-printing are Moradabad, Thakurdwara, Kanth, Amroha, Pipalsana, Paikhara and Sambhal. The product mostly consists of floor cloths, quilt-covers, bed-spreads, and chintz (recently introduced) and is exported to the Punjab, and parts of United Provinces by dealers of Moradabad who purchase the fabric from the calico-printers. Mostly kaobcha work is done. Two men can prepare 40 *fards* in 5 days. Each *fard* is $2\frac{1}{2}$ yards \times $1\frac{1}{2}$ yard made out of a piece of cloth 7 yards \times $\frac{1}{2}$ yard; this cloth represents $\frac{1}{3}$ of a *than* and costs about Re. 1-4-0. The colours etc. used in printing 40 *fards* cost about Rs. 5 and miscellaneous expenses come to the same figure. The *fards* sell at Rs. 35 per score giving the printer a profit of 4 aunas per *fard* or Re. 1 per day. The annual consumption of cloth is worth about Rs. 8,50,000 and the production is worth about Rs. 12,00,000. When the exporting firms of Moradabad have no order on hand to execute they do not purchase the prints. In that case the artisan deposits the cloth with the firm, and on its security gets an advance to the extent of 75 per cent. of the value of the cloth. Interest charged is usually 2 per cent.

Suggestions.—Instruction in proper manipulation of dye-stuffs to produce fast colours, and co-operative societies for financial assistance to the artisans are required. Small factories for producing fast-dyed yarn will do well as the demand of it is increasing.

(b) *Fibres.*

(i) *Sann hemp*.—The area under sann hemp in 1921-22 was 1,493 acres and the estimated yield of fibre about 10,000 maunds. The chief centre for the export of sann hemp is Chandausi. Only five years back sann hemp used to collect at Chandausi from the districts of Farrukhabad, Mainpuri, Etah, Bareilly, Budaun, Shahjahanpur, Pilibhit, etc. and Rampur State. The fibre was half-pressed in wooden hand-presses and exported to Calcutta or Bombay, where the bales had to be opened and the fibre cleaned and pressed before export to Europe. There were 12 or 13 such presses in Chandausi and the annual export of fibre was about 20,000 bales, weighing 300 lbs. each. Owing to the contraction of European demand the pressing and export business has declined. The fall in demand is mainly due to the fact that Chandausi sann hemp was found adulterated with mud, etc. At present the market for Chandausi sann hemp is the Punjab, which takes about 10,000 maunds of sann hemp.

Much capital is lying locked up in the Chandausi ginning factories that remain closed from season to season. If some of the proprietors could import machinery for cleaning, sorting and pressing the fibre, there is every likelihood of the European demand reviving. The coming British Empire Exhibition affords a good chance of displaying a suitable sample of cleaned fibre.

(ii) *Paper*.—Some paper is manufactured by hand at Samthal where there are eight or 10 persons, paid by piece work, working in small factories situated in Kagzisarai. The process of manufacture has been described by Mr. A. C. Chatterjee on page 82 of his "Notes on the Industries of the United Provinces." Waste paper is purchased from the printing presses and book-binder's shops at Moradabad, but no sann hemp is used now as the raw material. The paper is in demand mostly at Moradabad just before the Dasehra festival when the Indian traders change their account books, the price then goes up but the factory owners are poor and cannot afford to stock for this occasion the paper they make all the year round; they have, therefore, to sell

it to petty paper-dealers of Moradabad, as soon as it has been made. About 10 quires of paper are made in a day in each factory.

The following gives an idea of the cost of manufacture and the sale price of 10 quires :—

			Rs.	a.	p.
Waste paper, 1/3 of a maund	...	...	1	4	0
Sajji, 1/3 of a seer	...	...	0	1	6
Soap used for washing the pulp	...	...	0	2	0
Wheat flour for sizing the paper (2 seers of maida)			0	10	6
Fuel for working the flour	...	...	0	2	0
Wages	...	...	3	8	0
			<hr/>		
Total	...	...	5	12	0
			<hr/>		

Sale price at Moradabad, Rs. 7-8-0 : profit, Rs. 1-12-0.

The factory owner has to pay for taking the paper to Moradabad and to bring back waste paper. The daily earnings of each artizan are about annas 10.

Suggestion.—The industry is on the decline because mill-made paper is coming in increasing use even for the account books.

(iii) *Moonj.*—There is a vast area under moonj in the bhoot tract and in the Ganges Khadir of tahsil Hasanpur. The annual yield of moonj is not less than 25,000 maunds worth about Rs. 1,00,000. The census of 1911 returned 322 men and 1,453 woman as actually engaged in the manufacture of rope, twine, and string. One person can deal with 2½ seers of moonj daily. About 10,000 maunds ban, worth about Rs. 1,00,000 are manufactured every year. Hasanpur and Chandausi, and to a less extent Bahjoi, are the collecting and exporting centres for ban ; and while Hasanpur is known for the quality of its ban which sells at 1 seer 4 chhataks to 1 seer 8 chhataks per rupee. Chandausi is the bigger collection and exporting centre where ban comes from the Budaun district as well. Most of the ban produced in the district or brought to it for sale finds export to the Punjab and other parts of the country. The workers, mostly females, earn a wage of about Re. 0-4-0 a day each. Besides ban,

large quantities of moonj find export to the Punjab. The manufacture of fine ban could be easily taken up by the agriculturists as a subsidiary occupation.

Moonj mats are made in the Moradabad District Jail. The daily outturn per man is $1\frac{1}{2}$ to 2 square yards of matting. The weight of matting is about 3 seers per square yard, and the price about Re. 1 per square yard. Moonj is obtained at Rs. 3 to Rs. 4 per maund, and the total loss in the various processes of moonj-pounding, ban-twisting, ban-cleaning, and mat-weaving comes to about 50 per cent.

C. Wool.

Year.	No. of sheep.	Estimated annual yield of wool.	Average prices.
		Mds.	Rs.
1919	45,444	850	20 to 25 per md. of wool.

(i) *Blankets*.— Cheap coarse blankets are made in a few villages of the district and sold to the villagers at Rs. 2 to Rs. 2-8-0 each. Carding, spinning, and weaving are all done by the Gadariya family in leisure hours, and milling is done with the addition either of oil-dirt, or of charcoal and ashes, etc. The industry as such is insignificant. The greatest dealer is the firm, Bhagwant Singh, Basant Singh of Kanth, which sells about 4,000 blankets a year.

(ii) *Carpets (a)*.— *Woollen pile carpets*: These are made at Amroha. There are five small factories with two looms each. Two persons work on each loom. Wool is purchased at Amroha at 1 seer 4 chhataks per rupee or is obtained from Rampur at 1 seer 8 chhataks per rupee. Carding is done by local "dhunas" at 5 seers for a rupee. Spinning is done by the local gadariya women at 4 seers for a rupee. Dyeing with synthetic dyes is done at the home of the factory owner or by a professional dyer, the charges for dyeing 2 seers of yarn being a rupee. The carpets made are good but the colours are indifferent. If vegetable dyes are used

or the synthetic dyes properly handled to give fast colours, the industry is capable of development. Hand-spun cotton yarn for warp is purchased in the local market at 10 chhataks for a rupee. This is twisted into warp thread by women, the charges being 0-2-3 a seer of yarn. The usual size of a carpet is 1 yard 12 inches \times 2 yard 9 inches weighing about 5 seers of which 2 seers is cotton yarn used for warp. Such a carpet would have about 200 knots breadthwise and about 500 knots lengthwise. Each man can easily put in about 100 \times 100 knots daily, and this work would give him 14 annas. Sale is effected at the bathing fair of Garhmuktesar and the Nauchandi fair of Meerut; while a few carpets are sold to camel customers or to Lala Mangal Sen of Amroha who exports them in execution of orders. Carpets are sold by weight at about Rs. 4-8-0 a seer. The following is an estimate of the profits per carpet :—

	Ra.	a.	p.	
Cost of 2 seers of cotton yarn	...	3	4	0
Cost of twisting warp thread	...	0	5	0
Cost of 4 seers 4 chhataks of wool	...	3	6	6
Cost of carding 4 seers 4 chhataks of wool	...	0	13	0 (loss in card-
Cost of spinning 3 seers 14 chhataks of wool	...	0	15	6 (loss in spin-
Cost of dyeing 3 seers 12 chhataks of woollen yarn	...	1	4	0 (loss in spin-
Cost of tying 200—500 knots	...	8	12	0 (loss by clip-
				ping is 12)
				chhataks.
		18	12	0
Sale price	...	22	8	0
Profits	...	3	12	0

(b) *Cotton pile carpets.*—These are made at Amroha as well as in the Moradabad District Jail. In the jail mill-spun yarn of 10½ counts is used and the carpet is sold Rs. 5 at a seer. At

Amroha yarn spun out of old cotton is used for tying knots and is purchased in the market at Re. 1 per seer; the carpet is sold at Rs. 3-8-0 to Rs. 4 a seer.

15. Wood-work and carpentry.

(i) *Building materials.*—Timber for building purposes is available locally in the form of mango, "shisham", and jaman logs (price Re. 1-8-0 to Rs. 2-8-0 per c. ft.); while the lowlands of Hasanpur produce a fair amount of bamboo. Timber of a superior kind such as "sal" and "asna" (price Rs. 3 to Rs. 4 per c. ft.) come from the forests of Garhwal (Kalagarh) and Naini Tal (Lalkua). Moradabad is also the centre for the distribution of bamboos which are floated down the Ramganga and taken out at Moradabad. Lala Ram Gopal intends to put up a saw-mill at Moradabad.

(ii) *Carts:* Only country carts are made. The industry centres at Amroha where about 100 "raths" are made annually (these being sold chiefly at the Garhmuktesar fair at Rs. 150 to Rs. 300 each) and at Chandausi where about 500 "rehlus" are made annually (these being sold chiefly at the Rajghat fair at Rs. 30 to Rs. 50 each).

(iii) At Chandausi there is a considerable manufacture and export of "khat pattis" (or bedstead sides) while at Amroha there is a high family engaged in the manufacture of folding bedsteads (or "bughcha-ka-palang").

(iv) *Turnery and Lacquer-work.*—Amroha is the centre for this industry. Mango wood is mostly used, though "charpoy" legs and hundles for Moradabad spoons are made of superior kinds of wood. The articles turned are chiefly "dholaks" (small drums), dibbas (boxes), and toys, all of which are coloured with lac of various shades, and the plain chaklas (round wooden plate) and phalwas (wooden basin for keeping articles of diet). The toys take fanciful shapes and bear fanciful names, and though well-finished are poor in design; articles like toy-carts and model figures of animals, etc., which may appeal to the fancy of children are not made at all.

Mango logs (8 to 12 inches in diameter) are available at nearly Re. 0-8-0 a running yard. Seed lac is purchased from the local

manihars at Rs. 3 to Rs. 4 a seer and turned into shellac by the artizans themselves by mixing it with some rosin, melting it, and then straining it through a cotton bag in the molten condition; occasionally shellac itself is purchased from the manihars at Rs. 6 to Rs. 7 per seer. This shellac mixed with dyes, mostly synthetic, and made into sticks is used for colouring the articles. The industry is a cottage industry carried on at the shop of the artisan where he works with one or two relatives and occasionally a boy engaged on daily wages of 5 or 6 annas. The total number of artizans is about 30 whose daily outturn is worth about Rs. 40. The articles are sold either locally or at fairs, etc., in the neighbourhood, or else sent to various places in execution of orders. The daily earnings of an artizan come to about 12 annas or Re. 1. The prices of the boxes vary from Rs. 10 to Rs. 125 per hundred depending upon the size, design in colouring, etc. Dholaks sell at Rs. 50 to Rs. 150 per hundred. Plain utensils for keeping articles of diet sell at Rs. 15 a maund (about 100 articles making up a maund). Toys sell at Rs. 4 to Rs. 8 per hundred.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

(1) The district produces about 400 maunds of crude saltpetre which is all exported to Farrukhabad for refining. Bahjoi glass works require refined saltpetre in considerable quantities for making block glass and import it from the Aligarh district. A small refinery is needed in the district for producing refined saltpetre, and if started would do well. Saltpetre is being successfully refined at Kashipur (district Naini Tal) in the neighbourhood.

(2) Reh occurs in considerable areas of the district and is largely exported. It could be utilized for the manufacture of sodium carbonate (washing soda) and caustic soda. Dr. E. R. Watson of the Technological Institute, Cawnpore, has shown in an article in the Journal of Indian Industries and Labour (February, 1922) that it is possible to manufacture them from reh commercially and people desirous of undertaking their manufacture should refer to him for further information.

(3) River and jhil mussel shells are found in large numbers in this district. Bengal (Dacca) uses its river mussel shells in the manufacture of buttons and other small articles. The machinery is not expensive, and a factory utilizing the shells for the manufacture of buttons should pay.

(4) Amongst the agricultural products of Moradabad rice and wheat deserve special attention. Chandausi has begun to grind wheat for export to the districts of Allahabad, Benares, Lucknow, etc. while Moradabad is husking rice by power. These are steps in the right direction, but the present mills only deal with a minor portion of the produce and there is scope for more such mills. The district produces about 3,500,000 maunds and 1,500,000

nds of wheat and rice respectively, while the mill at ndausi is dealing only with 60,000 maunds of the former.

(5) A die press will do well in Moradabad, as Moradabad ndy imports large assortments of die-stamped utensils from oa, etc., for tinning them or for doing ornamental work am ka kam) on them. Polishing machinery could be success- y combined with the die press.

(6) An attempt should be made to arrest the export of raw s and skins. Raw material is available to the extent of : 27,000 hides and 17,000 skins in the district and the supply d be imported from the neighbouring districts also. Babul r is available in quantities which far exceed the needs of the rict. Water is plentiful and the drainage is good. A tannery ld, it is hoped, be a success.

(7) *Bones.*—Bone meal is a good fertilizer and will probably favour with the people, especially the baghbans of Sambhal have long been using horn shavings. A small plant for hing bones would be a success.

(8) *Fat.*—Large quantities of fat are available and find ort. Fat is already used to a small extent as raw material soap, and the industry of making dhobis' soap could be eloped.

(9) A well-organized dairy is a great need of the district, and kely to do well. The dairy projected at Moradabad did not erialize only for want of perseverance in the organizers.

(10) Large quantities of sann hemp are exported from Chan- si. Small machines for making the fibre into string (sutli) prove very profitable.

(11) The district produces a large amount of raw cotton of erior quality which is almost all exported mostly to Japan. ndausi has several ginning and pressing factories and is a exporting centre. A spinning mill there will arrest much of export, if it could compete with the Japanese exporting firms.) spinning mill at Moradabad is importing cotton from the ab and is not producing yarn of counts higher than 16½.

although finer yarn of counts $20\frac{1}{2}$ and above can be spun out of the local cotton. At present it is imported into the district to the extent of about 18,000 maunds from Agra, Cawnpore, Ahmadabad, etc.

(12) Other possibilities are :—

- (1) *Kankar*.—Kankar lime has not found favour with the people, and therefore large quantities of kankar are exported from the district. Lime prepared from kankar will, however, be suitable for making cement or for making crude glass, such as is required in the district for making glass bangles.
- (2) *Potatoes*.—The large production of potatoes at Sambhal and the cheap prices at which they are available may make it possible for a starch factory to be successful in the district. Their starch content should be tested, and it may be seen whether it is rich in the material or not.
- (3) The bye-products of the slaughter-houses from the raw material for glue and gelatine, the manufacture of which could be taken up. Horns and bones could be utilized for the manufacture of a number of small, artistic, as well as useful articles (as buttons, boot marks, knife handles, card cases, etc.).
- (4) The large quantity of shira at present exported from the district mainly to the Punjab could be retained for the local manufacture of methylated spirits (used in making varnishes).
- (5) The district produces tobacco of good quality to the extent of 20,000 maunds, and manufacture of cheap cigarettes could be attempted, especially at Sambhal where the crop is particularly rich.
- (6) *Ghi* manufacturers could be organized on co-operative lines to cheapen the production of and to increase the supply of pure *ghi*.
- (7) Cotton seed is available and is largely exported. "Nim" fruit can be gathered in any quantity in case of a demand. Both these give oils which are known to be suitable for soap-making. The existing small soap factories of Moradabad depend upon other districts for

their supply of vegetable oils for soap-making. They can have useful raw material in the form of cotton seed oil and *nim* oil.

- (8) *Khas* is available in the district, but it is largely exported through Garhmuktesar. It should be distilled in the district and *khas* essence made therefrom.
- (9) Sann hemp used to be exported in large quantities from Chaudausi. The business has declined of late. The reason is said to be a contraction of European demand owing to the fact that Chaudausi sann hemp was found to be adulterated with mud, etc. If some of the gin-owners of Chaudausi, whose capital is at present locked up in the ginning factories and presses that remain closed from season to season, turn their attention to its export and get suitable machinery for cleaning the fibre, it may be possible to revive the demand by offering cleaned and fully pressed fibre for export.
- (10) Experience of the paper-manufacturers of Sambhal, whose business is fast declining, in the handling of paper-pulp, may be utilized by organizing papier-maché works at Sambhal.
- (11) Large quantities of munj are available in the district and find export. Manufacture of fine ban, already carried on to a small extent at Hasenpur, could be extended. Also munj could be made to yield pulp for paper. Manufacture of strings from aloe fibre could also be taken up.
- (12) Lac cultivation should be tried on from the large number of dhak trees in the Ganges khadir. There is a considerable demand for lac among the wood-workers and art potters of Amroha, which is met by seed-lac imported from Mirzapur.

CHAPTER IV.

STATISTICS.

1. Art industries.

MANUFACTURE OF EMBROIDERED CAPS AT AMROHA.

Raw material.

(a) Salma.—

Quantity.—100 to 110 tolas.*Place of origin.*—Lucknow.*Value.*—Rupees 150 nearly.

(b) Kalabatu.—

Quantity.—50 to 60 tolas.*Place of origin.*—Delhi.*Value.*—Rupees 75 nearly.

(c) Satin cloth, silk thread, etc.—

Foreign

Manufacture—(a) *Number of persons employed.*—800 to 1,000 artisans, about 200 men and the rest women.(b) *Wages.*—Contract wages are paid; 14 annas for working a tola of Salma, 4 annas for working $\frac{1}{2}$ of a tola of Kalabatun.

Wages for a full day's work come to about 8 annas per man and 4 annas per woman.

(c) *Outturn.*—About 100 caps daily of the value of Rs. 500 to Rs. 600.(d) *Marketing system.*—Caps are sent by factory owners in execution of orders.(e) *Profits.*—The factory owner's profits are 10 or 12 per cent.

2.—Chemicals.

(1) MANUFACTURE OF CRUDE SALTPETRE IN THE
HASANPUR TAHSIL.*Manufacture—*(a) *Number of persons employed.*—Fifteen men on 5 furnaces.

- (b) *Wages*.—No wages are paid as the three men on a furnace are equal partners. Daily earnings come to about 12 annas.
- (c) *Outturn*.—The annual outturn per factory is about 80 maunds of crude saltpetre, or about 400 maunds in all, worth Rs. 1,400.
- (d) *Marketing system*.—The product is purchased by men from Ferozabad, etc., who come twice a year to buy.

REH EXPORTED FROM KANKATHUR STATION TO PLACES
OUTSIDE THE DISTRICT.

Raw material.

- (a) *Quantity*.—About 80,000 maunds.
- (b) *Place of consignment*.—Bijnor district, Rampur State.
- (c) *Value*.—About Rs. 7,000.

3.—Food crops.

Year.	Crop.	Acreages.	Outturn in maunds.	Prices.
1921-22	Wheat alone and mixed.	384,474	3,500,000	Rupees 6-8-0 to Rs. 7-8-0 a maund.
	Gram alone and mixed.	145,792	1,200,000	Rs. 5-2-0 a maund.
	Masur ...	4,781	20,000	.. 5-2-0 ..
	Arhar alone and mixed.	131,066	800,000	.. 5-0-0 ..
	Urd and moong	40,504	200,000	.. 6-0-0 ..
	Moth ...	32,107	160,000	.. 5-8-0 ..
	Others ...	3,940	20,000	
	Total pulses...	358,190	2,400,000	
	Rice (mostly sathi).	130,497	1,500,000	Rs. 10 a maund.
Potatoes ...	1,241	100,000	Rs. 3 or Rs. 4 a maund.	

The census of 1911 returned 282 males and 9,554 females as actual rice pounders and huskers and flour grinders.

(i) FLOUR MILLS.

Rustogi Flour Mills, Ohandausi.

Raw material: Quantity.—Wheat about 220 maunds daily available locally at Rs. 7 a maund. -

Number of hands.—About 25.

Wages.—Monthly Rs. 18 to Rs. 20 each.

Daily outturn.—About 200 maunds of flour sold at Rs. 8 a maund. Twenty maunds of bran sold at Rs. 4 a maund.

Mechanical appliances.—Steam engine, 26 H. P.

(ii) PULSE FACTORIES.

Lalta Prasad's Pulse Factory, Ohandausi.

Raw material.—Arhar, about 15,000 maunds annually available locally at Rs. 4 per maund.

Manufacture.

(a) *Working capital.*—About Rs. 28,000.

(b) *Labour.*—Varying from 30 hands (rains) to 100 (in summer). Payment by time. Women or boys 5 annas a day; men 8 annas or 10 annas a day.

(c) *Total outturn.*—About 12,000 maunds of dal a year.

(d) *Mechanical appliance used for separating the grain from "chui," "chilka," etc., and for separating big pieces of grain from smaller ones.*

(iii) RICE-HULLING.

Raw material.

Paddy, about 40,000 maunds annually. The *Hansraj* paddy comes from the Tarai, as Ramnagar, Bazpur, Chilkamandi, etc., at Rs. 8 a maund.

A small quantity of *Anjana* paddy is used which is locally available at Rs. 5-12-0 a maund.

Manufacture.

(i) *Number of workers.*—About 400.

(ii) *Wages.*—Paid by piece work. Wages for unhusking a maund of paddy being about 10 annas. This is full day's work for a man.

(iii) *Outturn.*—Annually about 25,000 maunds. Price at Rs. 9 to Rs. 20 a maund.

(iv) *Profits of manufacturers* are about 10 per cent.

- (v) *Marketing system.*—Small manufacturers sell rice to bigger ones. These latter export it to the hills and also to the plains as required.

4.—Glass.

(i) MANUFACTURE OF BANGLES.

Raw material.

Crude glass imported from Ohhabila Sarai and Allahabad.

Broken glass bangles collected from neighbouring towns.

Daily consumption.—About 2 maunds 10 seers, costing Rs. 8.

Manufacture.

Small furnaces all worked on co-operative lines with 3 or 4 artisans each.

(a) *Number of persons employed.*—15.

(b) *Wages.*—The artisans are independent workers. Their daily earnings come to 12 annas or Re. 1 each.

(c) The daily outturn in weight is about 2 maunds, in number 18 or 19 thousand bangles, and in price about Rs. 25.

(d) *Marketing system.*—The bangles are sold to manihars in the towns who act as collecting and distributing agents.

(ii) UNITED PROVINCES GLASS WORKS, LIMITED, BAHJOI (MANUFACTURE OF CHIMNEYS, ETC.), YEAR 1921-22.

Raw material.

All imported sand from Jaijon or Burgarh at 12 annas a maund.

Soda from Messrs. Brunner Mond and Company at Rs. 152 per ton.

Lime from Katir at Rs. 1-8-0 to Rs. 1-10 0 per maund.

Saltpetre from Aligarh at Rs. 12 a maund.

Arsenic (foreign) at Rs. 19 a cwt.

Borax from Ramnagar at Rs. 30 a cwt.

Manganese dioxide from Sheorajpura at Rs. 25 to Rs. 65 per cwt.

The daily consumption is about 50 maunds.

Manufacture.

The factory has 2 furnaces.

- (a) *Capital.*—Rupees 8 lakhs, of which 1½ lakhs is rotating.
- (b) *Number of hands.*—About 180. Most are paid by time, Rs. 4 to Rs. 25 a month. Blowers are paid by piece work, Rs. 100 to Rs. 125 a month.
- (c) *Total outturn in weight or price.*—About 50 maunds daily or 12,000 maunds annually, of the value of about Rs. 1,60,000.
- (d) *Marketing system.*—Product sold by travelling agents and at established agencies.

Mechanical appliances.—One press, 3 blowing machines, 2 engines (each of 60 H. P.) Window glass machinery.

5.—Haberdashery.

MANUFACTURE OF HORN COMBS AT SAMBHAL.

A.—Raw material.

Buffalo horn. Daily consumption about 8 or 10 maunds. Value Rs. 13 a maund.

Place of origin.—Agra and the Punjab.

B.—Manufacture.

Cottage industry. 80—100 workshops with three or four men each.

- (a) *Number of persons employed.*—About 300 men.
- (b) *Wages.*—12 annas to Re. 1 for making 100 combs in rough or for cutting teeth in 50 combs. Generally outside labour is not employed and the workmen at a shop divide the day's income among themselves; earnings per man come to about Re. 1 per day.
- (c) *Outturn.*—Daily 8,000 to 10,000 combs of the value of about Rs. 375.
- (d) *Marketing system.*—The artisans sell the combs to local dealers (about 30 in number), some of whom are workshop owners as well. They export the combs in execution of orders,

- (e) *Profit*—The profits of the dealers are one anna six pies or two annas per rupee.

6.—Hardware.

BRASSWARE.

Raw material.

(a) Brass sheets from Bombay and Karachi. Annual consumption about 4,000 to 4,500 maunds, valued at about Rs. 3 lakhs.

(b) Broken brass utensils, purchased locally or imported from Mirzapur, etc., or foreign brass ingots. Annual consumption about 7,000 to 7,500 maunds valued at about Rs. 3 lakhs.

(c) Smaller quantities of tin, zinc, lead and sal ammonica.

Manufacture.

Cottage industry. Also small factories, with 8 to 10 men each.

(a) *Number of persons employed.*—Seven to eight thousand persons—men, women and children.

(b) *Wages*—In factories manufacturing artware payment is by time, each artisan being paid Rs. 25 to Rs. 35 a month. In other cases payment is by piece work, and each artisan earns about Re. 1 or Re. 1-8-0 a day.

(c) *Annual outturn in weight.*—11,000 to 12,000 maunds, in price Rs. 15 lakhs nearly.

(d) *Marketing system.*—Articles sent in execution of orders. Some travelling agents are kept to secure business and settle accounts. Art ware and spoons, forks, etc., are sold through agents who travel with samples.

(e) *Profits.*—Dealers' profits are one anna or two annas per rupee. Factory owners' profits are one anna or so per rupee.

Nickel and silver-plating and polishing factory of Messrs. R. M. Qasi and Co.—The factory works on commission.

(a) *Working capital*—Rupees 10,000 nearly.

(b) *Labour*—(i) *Number of hands.*—Seven men.

(ii) *System of payment.*—Monthly wages Rs. 25 to Rs. 40 each per month.

(c) *Outturn and profits.*—The factory is about one year old and is not getting sufficient work. At present it is working at a loss.

(d) *Mechanical appliances.*

(i) Oil engine 8 H. P. and 5 lathes each with two brushes.

(ii) Dynamo, 6 volts, 50 amperes, and three tanks, one for copper-plating, another for nickel-plating and the third for silver-plating.

7.—Leather.

Municipal slaughter-house figures (1921-22).

Municipality.		Cattle.	Sheep and goats.
Moradabad	...	14,241	9,192
Amroha	...	6,147	3,859
Sambhal	...	5,535	2,566
Chandausi	...	1,999	1,592
		27,922	17,209
		45,131	

Census of 1911.

Occupation or means of livelihood.	Total workers and dependents.	Actual workers.				Dependents.
		Total.		Partially agriculturists.		
		Male.	Female.	Male.	Female.	
Tanners, curriers, dressers and dyers	3,529	1,465	221	91	...	1,848
Makers of leather articles as trunks, water bags, etc. ...	205	100	...	2	...	105
Shoe, boot, sandal makers	5,992	1,756	188	150	1	4,048

Number of hides exported, about	...	...	27,000
Number of skins exported, about	...	...	17,000
Number of hides and skins tanned locally about	...	...	35,000
Number of hides and skins made into shoes, etc., about	...	...	25,000
Number of hides and skins made into water bags, buckets, etc., about	...	...	10,000
Prices—			

		Rs. a.	p.	Rs. a.	p.
Sheep skins	...	0	12	0	to 0 14 0 each
Goat skins	...	1	0	0	„ 2 0 0 „
Cow hide	...	5	0	0	„ 6 8 0 „
Buffalo hide	...	8	0	0	„ 12 0 0 „

8. Oils.

Crushing oil seeds.

Year.	Crop.	Area.	Outturn.	Prices.	Season.
		Acres.	Mds.	Rs. a.	
1921-22..	Duan ..	1,400	7,000	6 8 a md.	Rabi.
	Rape and mustard.	1,265	6,325	6 12 „	„
	Linseed ...	650	3,250	8 0 „	„
	Poppy ...	592	2,960	...	„
	Til ...	69	345	8 0 „	Kharif.
	Ground-nut	7	105	...	„
	Others ...	282	1,410	...	Rabi.
	Total ...	4,265	21,395	...	..

Census of 1911.

Occupation or means of livelihood.	Total workers and dependents.	Actual workers.				Dependents.
		Total.		Partially agriculturists.		
		Male.	Female.	Male.	Female.	
Manufacture and refining of vegetable and mineral oils.	10,625	3,111	2,435	846	35	5,079

These figures relate to the *telis* who carry on the manufacture of vegetable oils, as there is no refining of vegetable oils and no manufacture or refining of mineral oils in the district.

The daily outturn of a *ghani* is 4 seers of oil and about twice as much of cake from 12 seers of seed, and this gives the *teli* an income of 6 or 8 annas. About 170,000 maunds of cotton seed are available, but they are not crushed at all. The following are the rates at which locally crushed oils are available :—

Mahua	...	...	5½	chattaks for a rupee.
Nim	...	...	20	" "
Til	...	...	17	" "
Castor oil	...	...	20	" "
Dhan...	...	...	22	" "
Linseed	...	...	18	" "
Poppy	...	...	13	" "
Rape and mustard	...	...	21	" "

9.—Other industries of edible articles.

MORADABAD CIVIL DAIRY.

Raw material.

Milk purchased from neighbouring villages. About 1 maund is consumed daily and costs about Ra. 6-4-0.

Manufacture.

The dairy has three cream separating machines. One maund of milk gives about 5 seers of cream (price Re. 1 per lb.) The

35 seers that remain are resold to the villagers for Rs. 3-4 0. Generally the cream is washed into butter, 5 seers of cream yielding about 4 seers of butter (price Re. 1-4-0 per lb).

The dairy also keeps about 10 milch cattle and milk is sold at 2 annas per lb.

The dairy is looked after by the proprietor and his brother, and there are three servants who get Rs. 15 to Rs. 25 a month each.

The dairy supplies mostly the needs of the European and Anglo-Indian population of Moradabad living in the neighbourhood. The profits for a day's working are :—

	Rs. a. p.		Rs. a. p.
Cost of milk ...	6 4 0	Milk sold for ...	3 4 0
Cost of labour ...	2 0 0	Butter sold for	10 0 0
	<hr/>		<hr/>
Total ...	8 4 0	Total ...	13 4 0
Profit Rs. 5.	<hr/>		<hr/>

10.—Pottery.

ART POTTERY OF AMROHA.

Raw material.

Clay called "gwalthana," obtained from "jhol," a tank in the neighbourhood. Colours, metallic foils, glazes, lac, paints.

Manufacture.

- (a) *Number of workmen.*—About 10 families with one artisan each. Women afford great help.
- (b) *Wages.*—No wages are paid. Each family prepares wares for Rs. 30 to Rs. 35 a month, and this represents the monthly wages or income of a family.
- (c) *Annual outturn* is worth about Rs. 4,000.
- (d) *Marketing system.*—Sale is effected at Nauchandi fair, Meerut, Chaiti fair, Kashipur, etc., in the neighbouring cities on the Diwali festival and locally to visitors and outside dealers who come to Amroha.

11.—Textiles.

A.—COTTON.

(i) *Production.*

Year.	Area under cotton.	Yield.
1921-22.	48,054 maunds.	240,000 maunds kapas or 72,000 maunds lint.

(ii) *Ginning and pressing of cotton at Chandausi.*(a)—*Raw material.*

Seed cotton, partly local and partly imported from the Bijnor district. In 1921-22 about 140,000 maunds of cotton were ginned, pressed and exported. Value of 140,000 maunds was Rs. 18 lakhs.

(b)—*Manufacture.*

Ginning and pressing is carried on in 11 ginning factories (with 662 gins) and 8 presses. Yield of floss is about 30 per cent.

Outturn in 1921-22 was about 8,500 bales of cotton of 400 lbs. each.

Charges for ginning.—Rupees 3 per maund of ginned cotton, for pressing Rs. 7 per bale.

System of marketing.—The cotton bales are sold to and exported by five companies, a list of which is given in the directory. Price of floss was about Rs. 40 a maund and of seed was about Rs. 4-8-0 a maund.

Freight from Chandausi to Bombay is Rs. 2-12-3 per maund R. R.

(iii) *Ginning by hand.*

Number of workers.—743 women (census of 1911).

Annual culturn.—10,000 maunds of ginned cotton in one season of three months, at the rate of 6 seers of floss per worker per day.

(iv) *Spinning by power.*

Moradabad Spinning and Weaving Mills Company, Limited, Moradabad.

(a) Year—1921-22.

(b) *Machinery*—Engine 180 H. P. Opening and carding machines, 10,080 spindles.

- (c) *Number of hands.*—About 300.
- (d) *Wages.*—Rupees 22 a month on an average.
- (e) *Raw material used.*—22,000 maunds of ginned cotton imported from the Punjab (Kasur, etc.).
- (f) *Outturn.*—Weight 3,800 bales of yarn, 5 maunds each. Value Rs. 13,70,000.—Counts spun $12\frac{1}{2}$; $14\frac{1}{2}$.
- (v) *Handloom factory of Pandit Murari Lal, Sambhal.*

Raw material.

Cotton yarn of counts $20\frac{1}{2}$ and $40\frac{1}{2}$, silk yarn purchased from Amritsar at Rs. 9 to Rs. 11 per seer.

The factory has 14 fly-shuttle looms (5 Salvation Army Patent Automatic looms, 6 frame looms, and 3 pit looms) and one warping machine. Garha, Gabrun, dhotis, towels, etc., are woven usually with a little silk or silk and cotton union.

Wages—Piece work wages are paid at the following rates:—

For weaving cloth 27 inches wide $4\frac{1}{2}$ pice per yard.

“ 36 “ “ 6 “ “

“ 45 “ “ $7\frac{1}{2}$ “ “

“ 54 “ “ $8\frac{1}{2}$ “ “

There are two instructors paid Rs. 30 and Rs. 20 a month respectively for training the apprentices and preparing the warps. Bobbins are prepared by women at the rate of 4 for a pice. The monthly outturn of cloth is worth about Rs. 1,200, and the product is sold mostly at his Moradabad shop. The prices are:—

Gabrun: 1 yard wide at 7 as, 6 pice to 10 annas a yard.

Dhoti: $1\frac{1}{2}$ yard \times 10 yards at Rs. 4-12-0 each.

Towels: $1\frac{1}{2}$ yard \times $\frac{1}{2}$ yard at 8 annas each.

“ $1\frac{1}{2}$ yard \times $\frac{1}{2}$ yard at 12 annas each.

Silk and cotton union: 1 yard wide at Rs. 1-4-0 a yard.

Silk: 27 inches wide at Rs. 1-8-0 to Rs. 2 a yard.

(vi) *Weaving on handlooms.*

Raw material.

- (a) *Hand spun yarn.* Annual consumption about 8,000 maunds. Value Rs. 5 lakhs at 10 chhattaks a rupee, available locally.

- (b) Mill-made yarn. Annual consumption about 30,000 maunds. Value Rs. 24,00,000 at Rs. 10 per bundle of 5 seers. About half is the product of the Moradabad mill, while the other half is imported from Agra, Cawnpore, Ahmadabad, etc.

Manufacture—

- (a) Number of persons engaged.—About 16,000 men on 4,000 looms.
- (b) Wages.—No wages are paid. The daily income per loom is Re. 1-4-0 or Re. 1-8-0.
- (c) Annual outturn in weight about 44,000 maunds, value about Rs. 42,50,000.
- (d) Marketing system.—About Rs. 30,00,000 worth of cloth is sold to dealers in Moradabad who export it in execution of orders from the Punjab, etc. Of the remainder, about two-third is utilized by calico-printers who purchase it from the weavers on market days. The rest is consumed locally.
- (e) Profits.—The profits of the exporting dealers are 1 anna or 2 annas per rupee.

Weaving of Niwar :—

Raw material—Yarn spun from spent cotton. Daily consumption at Moradabad about 10 or 12 seers. Price 14 annas a seer.

Manufacture—Cottage industry :—

- (a) Number of persons employed.—About 8 or 10 men.
- (b) Wages.—Daily income is 12 annas or Re. 1.
- (c) Outturn.—Daily outturn per man is 1 seer to 1 seer 8 chattaks of niwar. The price of niwar is Re. 1-4 to Re. 1-12-0 a seer.
- (d) Marketing system.—The niwar is sold to local dealers.

Weaving of durries (carpets)—

Raw material.—Yarn spun out of spent cotton. Daily requirements, about 6 or 7 maunds of the value of about 200 or 225 rupees. Purchased locally.

Manufacture :—About 60 looms, with 2 artisans to each.—

(a) *Number of workmen employed.*—About 120.

(b) *Wages and system of payment.*—The artisans are generally independent workmen, and no wages of any kind are paid except the following:—

Opening and twisting of yarn done by women; 2 annas a seer.

Dyeing—dark blue $1\frac{1}{2}$ or 2 seers of yarn for a rupee.

light blue 3 or 4 seers of yarn for a rupee.

Sometimes the artisans work on commission and then the following wages are charged for weaving:—

Weaving plain durrie, 8 annas per seer of yarn.

Weaving with white and blue stripes, 12 annas per seer of yarn.

Weaving with light and dark blue stripes, Re. 1 per seer of yarn.

(c) *Outturn.*—The daily outturn is about 120 durries (2 per loom), plain-white, each 2 seers or $2\frac{1}{2}$ seers in weight, $2\frac{1}{2}$ yards \times $1\frac{1}{2}$ yards in measurement, and priced at Rs. 2-8 or Rs. 3.

(d) *Marketing system.*—The durries are sold in the bazar on Tuesday and Friday evenings to the public, the petty dealers, or the exporting firms.

(e) *Profit.*—The income of an artisan comes to 12 annas or Re. 1 a day.

(vi) *Calico Printing.*

Raw material.—Locally woven cloth purchased from the weavers on market days. Annual consumption is worth Rs. 8,50,000.

Manufacture—

(a) *Number of persons employed.*—About 720.

(b) *Wages.*—No wages are paid. The daily income of a cloth-printer is about Re. 1. Sometimes the printer works on commission and then his charges in case of kachcha work are about 8 annas per piece out of which he has to buy the colours, mordants, etc.

(c) Annual outturn is worth about Rs. 12,00,000 and consists of about 700,000 pieces.

(d) *Marketing system.*—The printed fabrics are sold to firms of Moradabad who export them in execution of orders.

Fibres.

(i) *Sann hemp.*

Year.	Area.	Estimated yield.	Season.
1921-22 ...	1,493	10,000 maunds of fibre ...	November to February.

Price Rs. 7-4-0 a maund for fibre.

Sann hemp collects at Chandausi from the neighbouring districts and finds export to the Punjab. Export of sann hemp from Chandausi :—

(a) *Quantity.*—About 10,000 maunds a year.

(b) *Place of consignment.*—The Punjab.

(c) *Value.*—About Rs. 72,000.

(ii) *Paper.*

Manufacture at Sambhal.

A.—*Raw material*—

Waste paper from book-binders' shops and printing presses of Moradabad, etc. Daily consumption is about 26 or 27 seers costing about Rs. 2-8-0

B.—*Manufacture*—

Two small factories—

(a) *Number of persons employed.*—About 8 or 10.

(b) *Wages.*—Piece work wages.

	Rs.	a.	
Kneading the pulp under foot ...	2	0	per md.
Washing the pulp in water ...	0	12	"
Making sheets of paper ...	1	8	" *
Drying sheets of paper ...	1	8	"

	Rs. a.	
Smoothing the sheets	... 0 3	per md.
Starching	... 0 6	„
Glazing	... 3 12	„
Trimming the sheets	... 0 6	„
Daily earnings per artisans are		
about	... 0 10	„

(c) *Outturn in weight.*—2/3rd of a maund daily, making about 20 quires of paper, of the value of about Rs. 15.

(d) The factory owners bring the paper occasionally to Moradabad and sell it there to petty dealers.

(e) *Profits.*—The profit of the factory owner is about 25 per cent, on the cost of outlay.

(iii) *Moonj.*

Area.—Bhur and Ganges khadir.

Annual yield.—About 25,000 maunds in weight; Rs. 1,00,000 in value. Price Rs. 3 to Rs. 4 per maund.

Season.—November to March.

Rope and string making.

Raw material.—Moonj, available locally.

(a) *Number of persons engaged.*—322 men and 1,453 women (census of 1911).

(b) *Annual outturn of string (for four months, November to March, at the rate of 8 seers per worker per day.)*—About 10,000 maunds of ban from about 125,000 maunds of moonj. In value about Rs. 1,00,000.

(c) *Wages.*—No wages are paid. The daily consumption of moonj per worker is about 2½ seers costing about 4 annas and the daily outturn of ban is about 2 seers of the value of 8 annas. So the daily wages come to about 4 annas per worker.

(d) *Marketing system.*—Ban is sold to dealers of Chandausi, Bahjoi, or Hasanpur who export it.

Wool.

Year.	No of sheep.	Total annual yield of wool.	Price.
1919	45,444	850 maunds	... Rs. 20 to Rs. 25 a maund.

Manufacture of woollen pile and cotton pile carpets at Amroha.

Raw material—

The daily requirements of Amroha are:—

- (i) Four and a quarter seers of wool, available locally or imported from Rampur, costing about Rs. 2-12-0 to Rs. 3-4-0.
- (ii) Four seers of cotton yarn. Available locally, costing about Rs. 6.
- (iii) Three and three-quarter seers of yarn from spent cotton. Available locally, costing about Rs. 3-12-0.

Manufacture—

Five small factories, each with 2 looms, and 2 men working at each loom.

- (a) *Number of workmen.*—About 20.
- (b) *Wages.*—Piece work wages:—
 - Carding, Re. 1 for 5 seers.
 - Spinning, Re. 1 for 4 seers.
 - Dyeing, Re. 1 for 3 seers.
 - Opening cotton yarn and twisting it, —0-2-6 for a seer.
 - Tying the knots, annas 14 for tying 100 × 100 knots.
 Each artisan can daily put in 100 × 100 knots and earn 14 annas.
- (c) *Outturn.*—Daily one woollen pile carpet 1½ yard × 2½ yards weighing about 5 seers and costing Rs. 22-8-0. One cotton pile carpet costing Rs. 16-4-0.
- (d) *Marketing system.*—Carpets sold at the fairs, like Garhmuktesar, or Nauchandi, or sold to Lala Mangal Sen of Amroha who exports them in execution of orders.
- (e) *Profits.*—The profit of the factory owner is about 20 per cent. on the cost of outlay.

12. Wood work and carpentry.

Turnery and lacquer work of Amroha.

Raw material—

Mango wood available locally.

Seed-lac purchased from local manihars.

Daily consumption.—About 2 seers of value about Rs. 7.

Manufacture—cottage-industry—

(a) *Number of persons engaged.*—About 30.

(b) *Wages.*—No wages are paid as the artisan works at home with his son, brother, or other near relative. Occasionally a boy is engaged for turning the lathe on 5 or 6 annas a day.

(c) The total outturn of Amroha is worth Rs. 40 daily.

(d) *Marketing system.*—The articles are sold either locally to small dealers or at fairs, etc., in the neighbourhood, or else sent to various places in execution of orders; sometimes outside dealers come personally to Amroha to make the purchases.

(e) Profit daily income per artisan is 12 annas to Re. 1.

The census of 1911 returned 5,308 men as total and 1,244 men as partial sawyers, carpenters, turners, joiners, etc.

CHAPTER V.

DIRECTORY.

1. List of banks :

- (1) The Imperial bank of India, Ltd. (Sub-agency), Moradabad.
- (2) The Allahabad Bank, Ltd. (Sub-agency), Moradabad.
- (3) The District Co-operative Bank, Ltd., Moradabad.
- (4) The Allahabad Bank, Ltd. (Sub-agency), Chandausi.
- (5) The Tata Industrial Bank, Ltd. (Sub-agency), Chandausi.
- (6) The Central Co-operative Bank, Ltd., Kanth.

2. List of Industrial and Technical Schools.

Government Weaving School, Sambhal.

3. List of non-agricultural Co-operative Societies.

Glass Workers' Co-operative Society, Bahjoi.

4. List of Embroidery Factories (Amroha).

- (1) Abdal Wahid.
- (2) Syed Mehdi Hasan.
- (3) Zahoor Mohammad.
- (4) Shaikh Amjad Ali.
- (5) Raja Ram Bulaki Das.

5. List of dealers in building materials.

Ford and Macdonald Ltd. Lime-kiln, Brick kiln, etc.

6. List of roller flour mills at Chandausi (exporting flour).

1. Rustogi flour mills (Sahu Madho Ram).
2. Chowdhry flour mills (Sahu Bhagwan Das, Chowdhry Ram Sarup).
3. Hira Lal Ram Gopal's Flour mills (Chandausi flour mills).

7. List of Pulse Factories at Ohandausi.

- (1) Lalta Parshad's factory.
- (2) Badri Parshad Salig Ram's factory.
- (3) Phul Chand Roshan Lal's factory.
- (4) Persan Ram Ram Din's factory.
- (5) Narayan Das Dori Lal's factory.
- (6) Sewa Ram Govind Ram's factory.
- (7) Badri Parshad Panna Lal's factory.
- (8) Sethumal Shiam Lal's factory.

8. List of leading banjaras (Huskers of rice) of Darhal.

- (1) Mohammad Noor.
- (2) Mohammad Husain.
- (3) Ahmad Noor.
- (4) Pir Mohammad.
- (5) Shah Mohammad.
- (6) Habban Mian.
- (7) Chhuttan.
- (8) Ali Mohammad.
- (9) Mohammad Ishaq.
- (10) Abdul Qadir.
- (11) Abdul Sattar.

9. Glass Factories.

The United Provinces Glass Works, Ltd., Bahjoi.

10. List of importers of Horn at Sambhal.

- (1) Salar Bukhsh, Chowdhry Sarai.
- (2) Amir Uldic, Sarai Tarin.
- (3) Nabi Bakhsh, Sarai Tarin.

11. List of exporters of Horn Combs, Sambhal.

- (1) Ajudhya Pershad Ram Chander.
- (2) Ram Gopal Sharma & Co.
- (3) Chhuttan.
- (4) Haji Bhure.
- (5) Kallu.
- (6) Alladiya.
- (7) Inta.

(8) Kallan.

(9) Masit.

12. List of importers of unwrought brass at Moradabad.

(1) Misri Lal Hazari Lal.

(2) Hazari Lal Pearey Lal.

(3) Lalta Pershad Gulzari Mal.

(4) Jagannath, Ram Saran.

(5) Mohan Lal Gopal Das.

(6) Ram Ratan Sri Niwas.

(7) Kashi Nath.

(8) Suraj Mal.

(9) Misri Lal Ram Saran.

(10) Bulaki Das Shimbhu Nath.

13. List of Brassware Factory owners at Moradabad.

(1) Najab Khan.

(2) Hafiz Mohammad Noor.

(3) Nanhey Khan.

(4) Ishtayaq Husain.

(5) Mohammad Husain.

(6) Ali Husain.

(7) Abdul Karim.

(8) Sadiq Husain.

(9) Amjad Khan.

(10) Ahmad Husain.

(11) Abdul Salam.

(12) Sheikh Najib Ulla.

(13) Mohammad Ali.

(14) Majid Khan.

(15) Ahmad Ali.

(16) Mohammad Husain.

(17) Mumtaz Ali Khan.

(18) Ahmad Khan.

(19) Najib Ulla.

(20) Ali Husain Khan.

(21) Ishtiaq Husain (Bazar Piwan).

(22) Naeer Husain, Zulfiqar Husain, Intizar Husain (Town School).

- (23) Gundu (Bhatti Mohalla).
- (24) Ali Husain (Bhatti Mohalla).
- (25) Ahmad Husain (Nai Sarak).
- (26) Zaki Husain.
- (27) Chhajju Khan (Pakki Sarai).
- (28) Munshi Abdul Razak (Bhatti Mohalla).
- (29) E. H. Kasi & Co. (Nickel and silver plating and polishing.)

14. List of exporters of brass ware at Moradabad.

- (1) Jagannath Piare Lal.
- (2) Damodar Das Brij Lal.
- (3) Ganga Ram Lalman Das.
- (4) Sakkhan Lal Basi Ram.
- (5) Suraj Mal Shanti Pershad.
- (6) Makhan Lal Raghunandan Prasad.
- (7) Jagannath Newal Kishore.
- (8) Bankey Lal Nand Kishore.
- (9) Bulaki Das Shanti Pershad.
- (10) Juggi Lal Nannu Lal.
- (11) Sohan Lal Ohhotey Lal.
- (12) Munna Lal Pitambar Nath.
- (13) Benarsi Das Parshotam Saran.
- (14) Babu Ram Suraj Mal.
- (15) Jwala Nath Chadammi Lal.
- (16) Nand Kishore Radhe Lal.
- (17) Shyam Lal Raghbir Saran.
- (18) Hira Lal Radhe Lal.
- (19) Mohan Lal Chotey Lal.
- (20) Bannu Lal Nand Kishore.
- (21) Misri Lal Hazari Lal.
- (22) Sarya & Sons.
- (23) Murari Lal & Sons.
- (24) Palu Ram Saddhu Ram.
- (25) Madho Ram Radha Kishan.
- (26) Rama Nand Shanti Pershad.
- (27) Hira Lal Raja Ram.
- (28) Bannu Lal Kanti Prasad.

- (29) Haji Akbar.
 (30) Haji Abdul Salam Abdul Jalil.
 (31) Crown & Co.
 (32) Haji Abdul Bari Bashir Uddin.
 (33) Haji Fazle Ilahi.
 (34) Mohammad Din Fazle Karim.
 (35) Riazul Hasan Zahir Hasan.
 (36) Hamza Ali Zafar Husain.
 (37) Niaz Ulla Kasim Ali.
 (38) Mahbub & Co.
 (39) Badri Das Bankey Lal.
 (40) Bankey Lal Radhe Lal.
 (41) Bankey Lal Parashottam Saran.
 (42) Shiam Lal Anup Singh.
 (43) Mukta Pershad Murari Lal.
 (44) Tirbeni Pershad.
 (45) C. L. Khannah & Sons.
 (46) Muhammad Yar Khan & Sons.
 (47) S. H. Aziz Uddin & Co.
 (48) Altaf Husain Sajjad Husain.
 (49) M. J. Warisi & Sons.
 (50) Gohar Ali.
 (51) Dasa Mal Sohan Lal.
 (52) R. N. Shanon & Co.
 (53) Dita Ram Chander Sen.
 (54) Husain & Co.
 (55) Haqi Brothers.
 (56) Gokal Chand Hira Lal.

Factoryowners as
 well as dealers in
 ware.

15. List of Shoe Factories.

1. Qazi Sarwat Husain's Factory, Moradabad.
2. Ashiq Ali's Factory, Moradabad.
3. Ata Shoe Factory, Hasanpur.

16. List of Soap Factories.

- (1) Ram Gopal Misra & Co., Sambhal.
- (2) Ram Chandra Rustogi's Factory, Moradabad.

- (3) Bishun Soap Factory, Moradabad.
- (4) Chaumukha Pul Soap Factory, Moradabad.
- (5) Abdul Hakim's Soap Factory, Mohalla Faizganj, Moradabad.
- (6) Abdul Sattar's Soap Factory, Mohalla Faizganj, Moradabad.

17. Dairy.

Muhammad Husain's Civil Dairy, Moradabad.

18. List of Biscuit Factories, Moradabad.

- (1) Parshottam Das, Mohalla Kanungoyan, Moradabad.
- (2) Kunj Bihari Lal, Mohalla Kanungoyan, Moradabad.

19. List of Amroha Art Potters.

- (1) Kishor.
- (2) Rupa.
- (3) Kallu.
- (4) Nathu.
- (5) Govinda.

20. List of Pakka Arahtyas (through whom cotton transactions are effected).

- (1) Sahu Battu Lal, Chandausi.
- (2) Sahu Salig Ram Badri Prasad, Chandausi.
- (3) Sobha Ram Sri Ram, Chandausi.
- (4) Gokal Chand Kishan Lal, Chandausi.
- (5) Ram Gopal Fateh Chand, Chandausi.
- (6) Phul Chand Roshan Lal, Chandausi.
- (7) Hira Lal Ram Gopal, Chandausi.
- (8) Gopi Nath Kesav Deo, Chandausi.
- (9) Baldeo Rai Gopal Das, Chandausi.
- (10) Narain Dass Dori Lal, Chandausi.
- (11) Ajodhya Pershad Ganeshi Lal, Chandausi.
- (12) Setu Pershad Lalta Pershad Chandausi.
- (13) Narain Dass Shiam Lal, Chandausi.
- (14) Lachhman Das Mathura Das, Kanth.
- (15) Magni Ram Ram Kishen, Kanth.
- (16) Hazari Lal Kishen Sarup, Kanth.

(17) Moti Lal Chhajju Lal, Kanth.

(18) Chunna Lal Pershadi Lal, „

21. List of firms exporting cotton from Chandausi.

- (1) Valent Brothers.
- (2) Ralli Brothers.
- (3) Ghosa Ghosi Company.
- (4) Japan Cotton Trading Company.
- (5) Bhusan & Co.

22. List of ginning factories at Chandausi.

- (1) Ginning Factory of West's Patent Press Co., Ltd.
- (2) Ditto Jogi Ram Janki Pershad.
- (3) Ditto Bhawani Sahai Kashi Ram.
- (4) Ditto Amolak Chand Mewa Ram.
- (5) Ditto Hira Lal Ram Gopal (new factory).
- (6) Ditto Badri Narayan Keshab Deo.
- (7) Ditto Hira Lal Ram Gopal (old factory).
- (8) Ditto Battu Lal (Sahu).
- (9) Ditto Tansukh Rai Kidar Nath.
- (10) Ditto Keshav Deo Gopi Nath.
- (11) Ditto Behari Lal (Parshottam Ginning Factory).

23. List of Presses at Chandausi.

- (1) Press of West's Patent Press Company, Ltd.
- (2) Do. Jogi Ram Janki Pershad.
- (3) Do. Bhawani Sahai Kashi Ram.
- (4) Do. Amolak Chand Mewa Ram.
- (5) Do. Badri Narayan Keshab Deo.
- (6) Do. Behari Lal (Parshottam Press).
- (7) Do. Hira Lal Ram Gopal.
- (8) Do. Battu Lal (Sahu).

24. List of Spinning and Weaving Mills.

(1) Moradabad Spinning and Weaving Mills Company, Limited, Moradabad (only spins).

(2) Moradabad Cotton Mills Company, Limited, Moradabad (work not yet commenced).

25. List of Hand-loom Factories.

- (1) Pandit Murari Lal's Weaving Factory, Sambhal.
- (2) Swadeshi Vyopar Company, Limited, Weaving Factory, Moradabad.
- (3) Salvation Army Dépôt Weaving and Tailoring Factory, Moradabad (Fazalpur Settlement).
- (4) Salvation Army Weaving Factory, Kanth.
- (5) Sahu Kunj Bihari Lal's Factory, Kundarkin.
- (6) Lala Ram Ratan Khattri's Factory, Bilari.
- (7) Ganeshi Lal's Factory, Chandausi.
- (8) Lachhmi Narayan's Factory, Chandausi.

26. List of Yarn Merchants.

- (1) Ram Ratan, Bilari.
- (2) Kaliu, Bilari.
- (3) Vilayat Husain, Bilari.
- (4) Afzullah, Sahaspur.
- (5) Bhure, Sahaspur.
- (6) Muhammad Husain, Sahaspur.
- (7) Pershadi Lal, Sambhal.
- (8) Imdad Husain, Sambhal.
- (9) Lachman Das Mathura Das, Kanth.
- (10) Lachman Das Mool Chand, Kanth.
- (11) Lachhman Das Tula Ram, Kanth.
- (12) Lachhman Das Hazari Lal, Kanth.
- (13) Chhanja Jamal Uddin, Kanth.
- (14) Sadhu Ram Mukat Bihari Lal, Kanth.
- (15) Muhammad Ayub, Thakurdwara.
- (16) Muhammad Shafi, Thakurdwara.
- (17) Abdul Ghani, Thakurdwara.
- (18) Nand Kishor, Thakurdwara.
- (19) Haji Ibrahim, Moradabad.
- (20) Lachmi Narayan Kanhaiya Lal, Moradabad.
- (21) Abdulla Muhammad Noor, Moradabad.
- (22) Chhidda, Moradabad.
- (23) Keval Ram, Hasaupur.
- (24) Jagannath Bhole Nath, Hasaupur.

27. List of exporters of Cotton-cloth.

- (1) Gandhi Stores, Moradabad.
- (2) Khaddar Stores, Moradabad.
- (3) Khaddar Bhandar, Moradabad.
- (4) Punjab Swadeshi Bhandar, Moradabad.
- (5) Mahabir Swadeshi Emporium, Moradabad.
- (6) Himalya Dépôt, Moradabad.
- (7) Swadeshi Industrial Company, Limited, Moradabad.
- (8) Sanehi Lal Jagannath, Moradabad.
- (9) Sadan Lal Sanwal Das Moradabad.
- (10) Ratan Lal, Moradabad.
- (11) Munna Lal, Moradabad.
- (12) Chhaddammi Lal, Khattri, Sambhal.
- (13) Uttam Chhipie, Sambhal.
- (14) Ram Gopal Misra & Co., Sambhal.
- (15) Pandit Murari Lal Mahabir Pershad, Sambhal.
- (16) Sadhu Ram Mukat Bibari Lal, Kanth.
- (17) Bhagwant Singh Basant Singh, Kanth.
- (18) Chuuna Lal Pershadi Lal, Kanth.
- (19) Banwari Lal Ram Sarup, Kanth.
- (20) Shyam Lal, Moradabad.
- (21) Jawahir Lal, Moradabad.
- (22) Murari Lal Seru, Moradabad.

28. List of Sann-Presses at Chandausi.

- | | |
|---|--|
| (1) Ratan Lal, Chiranji Lal's Sann Press. | (7) Shubha Ram Sri Ram's Sann Press. |
| (2) Bankey Lal's Sann Press. | (8) Makkhan Lal's Sann Press. |
| (3) Santa Mal's Sann Press. | (9) Naraiu Das Dori Lal's Sann Press. |
| (4) Shiam Lal's Sann Press. | (10) Sewa Ram Govind Ram's Sann Press. |
| (5) Parmeshri Das Maulvi's Sann Press. | (11) Chhotey Lal Shiam Lal's Sann Press. |
| (6) Dharam Cband's Sann Press. | (12) Chhotey Lal Makkhan Lal's Sann Press. |

29. List of exporters of Ban, Moonj, Sirki, etc.

- (1) Jhabba Lal Chiranji Lal, Bahjoi.
- (2) Chiranji Lal, Tigri.
- (3) Narain Das, Hasanpur.
- (4) Bihari Lal, Hasanpur.
- (5) Parmanand, Hasanpur.
- (6) Jamna Das, Hasanpur.

30. List of Carpet Factories (Amroha).

- (1) Mangal Sen's Factory.
- (2) Nisar Ali's Factory.
- (3) Sadiq Ali's Factory.
- (4) Rahat Ali's Factory.
- (5) Shabir Ali's Factory.
- (6) Shib Shankar Sri Ram's Factory.
- (7) Damodar Das' Factory.

31. List of Wood-workers of Amroha,

- (1) Alim Uddin.
- (2) Abdul Karim.
- (3) Hamid Ullah.
- (4) Bashir.
- (5) Barkat Ullah.
- (6) Rahmat Ullah, Mistri.
- (7) Abdul Rahim, Mistri.
- (8) Usman Muhammad Siddiq.
- (9) Habib Ullah.
- (10) Nasib Ullah, Mistri.
- (11) Quadrat Ullah.
- (12) Chhanga.

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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Muttra District

By

MAULVI HAMID RAZA JAFFREY, B.A.

As revised by

MD. ZIA-UR-RUB, B.Sc., LL.B.



ALLAHABAD:

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FOREWORD.

MUTTRA is an ancient place of pilgrimage where tens of thousands of pilgrims come every year and from every part of India. Being the centre of the legends of the Krishna cult, those devoted to it are specially attracted to the district. Agriculturally it has several precarious tracts from the swampy lakes and water-logged depressions near the Jumna river on the borders of the Punjab to the dry sandy soils bordering on the Aligarh district. Cultivation is very extensive but not good and the produce naturally follows the condition of the rains in any year. Some part or the other always suffers either from excessive rainfall which affects the water-logged area or from scanty rains affecting the sandy soils. Efforts have, from time to time, been made to relieve the situation by draining the water-logged portion of the district and several drains of large lengths have been constructed while canals, of which the latest is the Mat Branch extension, have been constructed to supply the needs of irrigation. Still the produce is not commensurate with the extensive cultivation, nor the crops rich except where conditions are favourable. The result is that industries allied to agriculture are few and people are, for the most part, living on the charity of the pilgrims even in the interior of the district. A few ginning presses exist in the district but, as elsewhere, they are not found to be paying and many remain closed for a large portion of the season. Want of enterprise due to the above conditions has prevented these factories from taking to any subsidiary work. The only industries of the district are meant to cater for the needs of the pilgrims. These include the printing of cotton fabrics, the manufacture of silver toys and brass images, kanthis, mukat and other articles of shringar (decorations used in Ramfilas and Raslila, dramatic performances connected with the incidents of the lives of Ram and Krishna), etc. Of these the prints are the most important and of old Hindu type but lacking in attractive designs and expert printing. A school of printing is certainly a necessity of the place and as District Board is said to be willing to contribute

towards the cost of it, the present is the most opportune time to start it.

Charitably disposed people from all parts of India build temples and houses in Muttra where carved stones are used in large quantities. This has kept the art of stone-carving alive in the district but owing to inferior quality and workmanship of local work those who can afford it get workmen from Jaipur while Muttra workmen of reputation have migrated to Rajputana. Classes in designing should be arranged in the proposed printing school for this sort of work also.

The old manufacture of paper and ink which Muttra used to supply to a large part of the province has died out irretrievably as the competition with mills is too strong for the revival of this industry.

Muttra was a pastoral district but the shrinkage of water area due to extended cultivation has brought about a considerable reduction in the supply of dairy articles. What little there is of dairying belongs to Mr. Edward Keventer's dairy at Aligarh and is no gain to the district. The number of old habitations has resulted in large areas being under saltpetre. Its manufacture and refining are, therefore, industries, the natural outcomes of the local circumstances. So is the manufacture of cotton string. The water level being very low in Muttra and large hordes of people migrating from place to place for pilgrimage require long strings to draw water. These will, therefore, continue to live until circumstances change. A little wood-work and some blanket-weaving for which nothing can be done complete the list of industries in this blank district.

The report was written by M. Hamid Raza Jaffrey but was very incomplete and was revised by Mr. Zia-Ur-Rub. Mr. S. T. Gadre, Industrial Chemist to the United Provinces Government has further improved it and deserves the best thanks of the Department. Our thanks are also due to the following gentlemen for the help they have rendered in the survey work.—

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2. M. R. Richardson, Esq., Executive Engineer, Upper Division, Agra Canal, Muttra.

-
3. H. B. Shroff, Esq., B.Sc., A.M.S.T., Principal, Government School of Dyeing and Printing, Cawnpore.
 4. Lala Maharaj Kishen, District Engineer, Muttra.
 5. Babu Punjabi Lal, Tahsildar, Muttra.
 6. Babu Lakshman Prasad Gupta, B.A., LL.B., Vakil and Chairman of District Board, Muttra.
 7. Chaudhri Banwari Lal, M.A., LL.B., Secretary, District Board, Muttra.

CHAMPA RAM MISRA.

9th January, 1924.

CHAPTER I.

INTRODUCTION.

1. General features of the district.

(a) Boundaries.

North-West.—Gurgaon district.

North-East and East.—Aligarh district.

South.—Agra district.

West.—Independent State of Bharatpur.

(b) Topography.

The district lies in the basin of the Jumna, which flows through the centre of it and divides it into two tracts of somewhat dissimilar characteristics.

The district is divided into two portions (1) the bangar or uplands and (2) the khadir or Jumna tarai, which, excluding the actual river bed, covers an area of 59,453 acres.

Wood is scarce all over the district. There is no timber wood available in the district. Kankar is abundant all over the district.

2. Population.

Year.	No.	Area in square miles	Density per miles.
1921	619,138	... 1,204	514.23.

3. Rivers.

The Jumna and its two affluents—the Pathwaha and the Jhirna or Karwan.

4. Canals.

(Year 1921-22)

Name of canal.	Length in miles.	Crops irrigated.	Area irrigated acres.
Mat Branch Division, Ganges Canal.	43	Sugarcane, maize, millet, indigo, cotton, wheat, barley, gram, peas and other food crops.	} 67,612
Upper Division, Agra Canal	} 100	} Sugarcane, maize, millet, indigo, cotton, wheat, barley, gram, peas and other food crops. Rice to a very small extent.	} 21,924
Lower Division, Agra Canal			} 71,508

5. Railways.

Name of Railway line	Length in miles.	Stations.
G. I. P. and B. B. and C. I. Railways (broad gauge, Nagda-Muttra line).	46	Kosi Kalan, Chata, Ajhai, Chatikhera, Muttra Junction, Muttra Cantonment, Bad and Earab.
B. B. and C. I. Railway (metre gauge, Achnera branch).		
B. B. and C. I. Railway (Brindaban branch).	7	Muttra Junction and Brindaban.
E. I. Railway Main line	8	Jalesar Road.

6. List of ferries on the river Jumna.

Shahpur Chaundras.
 Kheral Majhoi.
 Shergarh.
 Behta.
 Siyara.
 Bhongaon.
 Sakraya.
 Alipur.
 Narhauli.
 Gadaya.
 Churmura.
 Bhadaya.
 Kesla Ghat.
 Gokal Ghat.

7. Roads.

A.—FIRST CLASS.

(i) Provincial.

			Length in miles.
Muttra-Delhi Road	...	...	32
Muttra-Agra Road	...	...	20
Sadabad-Hathras Road	...	...	2
Sadabad-Agra Road	...	...	8

(ii) *Local.*

Muttra-Bindraban Road	...	...	6
Muttra-Dig Road	...	...	17
Muttra-Bharatpur Road	...	...	14
Muttra-Gokal Road	...	...	8
Gokul Ghat and Gokul Road	...	...	1
Muttra-Sadabad Road <i>via</i> District Board	...	...	25
Muttra-Aligarh Road	...	...	15

B.—SECOND CLASS.

Muttra-Sonkh Road	...	...	13
Bindraban-Nohjhil Road	...	...	22
Chhata-Gobardhan Road	...	...	16
Kosi-Nohjhil Road	...	...	15
Jait-Shergarh Road	...	...	13
Jait-Sahan Road	...	...	8½
Chhata-Shergarh Road	...	...	8
Raya-Sadabad Road	...	...	18
Raya-Baldeo Road	...	...	10
Muttra-Aligarh Road	...	...	2
Farah-Kagarol Road	...	...	5½
Gobardhan-Sonkh Road	...	...	7
Baldeo-Itmadpur Road	...	...	14

Besides, there are fifth and sixth class roads 91 miles in length but these are no better than cart tracks.

8. List of markets.

Tahsil Chhata.

Markets.	Market days.
Chhata Town	... Friday.
Khaira	... Saturday.
Barsana	... Sunday.
Taroli	... Monday.
Kosi	... Tuesday.
Chaumohan	... Do.
Sahar	... Wednesday.
Shergarh	... Thursday.
Ranera	... Friday morning.
Sai	... Ditto.

Markets.	Market days.
Kamar ...	Days not fixed.
Nandgaon ...	Ditto.
Shahpur ...	Ditto.

Tahsil Mat.

Mohiuddinpur ...	Sunday.
Karahri	Tuesday and Friday.
Dillopatti ...	Saturday.
Sultanpatti ...	Thursday.
Harnaul ...	Sunday.
Lohi ...	Saturday.
Khaira ...	Thursday.
Sikandarpur ...	Wednesday.
Surir ...	Monday and Thursday.
Nahjhil ...	Friday.
Jaora ...	Monday and Friday.
Sheopatti ...	Saturday.
Mat ...	Wednesday.
Arua ...	Sunday and Thursday.

Tahsil Mahaban.

Sihora ...	Tuesday.
Pachawar ...	Sunday.
Akerni ...	Tuesday and Saturday.
Karab ...	Thursday.
Nilgaon ...	Do.
Garh Sali ...	Tuesday and Saturday.
Sonai ...	Thursday and Sunday.
Nagla Sajna Mazu Akos	Monday.
Airakhera ...	Saturday and Wednesday.
Mahaban ...	Wednesday.
Raya ...	Monday and Friday.
Dagheta ...	Monday.
Anandha ...	Saturday.
Jugsana ...	Wednesday.
Bardoli ...	Sunday and Wednesday.
Dewana ...	Wednesday.
Nina ...	Sunday.

Tahsil Sadabad.

Sadabad	...	...	Tuesday and Saturday.
Bisawar	...	...	Friday.
Kursanda	...	...	Sunday and Thursday.
Mai	...	...	Wednesday.
Gadumra	...	...	Thursday.
Naugaon	...	...	Wednesday and Sunday.
Sosayan	...	...	Monday.
Kajrath	...	...	Wednesday.
Tajpur	...	...	Monday.
Nanau	...	...	Sunday.
Bedai	...	...	Wednesday and Saturday.
Jarau	...	...	Monday and Friday.
Sehpan	...	...	Wednesday and Monday.
Madhoka	...	...	Monday and Friday.
Sista	...	...	Friday.
Khonda	...	...	Saturday.

Tahsil Muttra.

Ral	...	...	Monday.
Brindaban	...	...	Tuesday.
Aring	...	...	Sunday.
Gobardhan	...	...	Saturday.
Sonkh	...	...	Monday.
Palsan	...	...	Do.
Beri	...	...	Tuesday.
Magorra	...	...	Thursday.
Ale	...	...	Sunday.
Parkham	...	...	Friday.
Rehpura Jat	...	...	Thursday.
Farah	...	...	Friday.
Barari	...	...	Saturday.
Sersa	...	...	Wednesday.
Rehpura Jat	...	...	Thursday.

9. List of important fairs with an approximate attendance of 5,000 and over.

Chhata tahsil.

Locality.	Name of Fair.	Date.
Ghazipur	... Donga Fair ...	Bhadon Sudi Ika-dasi.
Nandgaon	... Janam Ashtami ...	Bhadon Badi 7th to 9th.
Barsanad	... Budhi Lila ...	Bhadon Sudi 13th.
Semri	... Mela Deviji ...	Chait Sudi Parwa.
Taroli	... Swami-ka-Mela ...	Katik Sudi 13th.

Mahaban tahsil.

Baldeo	... Deo Chat ...	Bhadon Sudi 4th to 10th.
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Muttra tahsil.

Muttra	... Ram Naumi ...	Chait Sudi 9th.
"	... Mahanidya ...	Chait Sudi 8th.
"	... Narsingh Lila ...	Baisakh Sudi 14th.
"	... Ban Bihar ...	Baisakh Sudi Puno.
"	... Dasehra ...	Jaith Sudi 10th.
"	... Jaljatra ...	Jaith Sudi Puno.
"	... Rath Jatra ...	Asarh Sudi 2nd.
"	... Parkarma Jugal Jori.	Asarh Sudi Ika-dashi.
"	... Bias Puja ...	Asarh Sudi Puno.
"	... Mela Tij ...	Sawan Sudi Tij.
"	... Pachthirthi ...	Sawan Sudi 5th.
"	... Mela Parkarms, Muttra.	Sawan Sudi Ika-dashi.
"	... Salune ...	Sawan Sudi Puno.
"	... Janam Ashtami ...	Bhadon Badi 8th.
"	... Madh Ban Parkarma.	Bhadon Badi Ika-dashi.
"	... Anant Chaudas ...	Bhadon Sudi 14th.
"	... Parkarma Muttra	Kuar Badi 11th.
"	... Ram Lila ...	Kuar Sudi Parwa to Kuar Badi Ikadashi.
"	... Bharat Milap ...	Kuar Sudi Ikadashi.

Locality.	Name of Fair.	Date.
Muttra	... Sarad Puno	... Kuar Sudi Puno.
"	... Diwali	... Katik Badi Mavas.
"	... Ankoot	... Katik Sudi Parwa.
"	... Jam Dutia	... Katik Sudi 2nd.
"	... Gow Charan	... Katik Sudi 8th
"	... Akhe Naumi Par- karma.	... Katik Sudi 9th.
"	... Kans Lila	... Katik Sudi 10th.
"	... Jugal Parkarma— Deothan,	... Katik Sudi Ikada- shi.
"	... Mela Keshav Deo	... Chait Badi Parwa.
"	... Phul Dol	... Chait Badi 5th.
Brindaban	... Birham Dutt	... Chait Badi 2nd to Doadashi.
"	... Mela Gungar	... Chait Sudi 3rd.
"	... Ram Naumi	... Chait Sudi 9th.
"	... Phul Dol	... Chait Sudi Ikada- shi.
"	... Akhe Tij	... Baisakh Sudi Tij.
"	... Narsingh Lila	... Baisakh Sudi 10th.
"	... Ban Bihar	... Jaith Sudi 2nd.
"	... Ban Bihar Parkar- ma Rathki.	... Jaith Sudi 5th.
"	... Ras Mandal	... Jaith Sudi Ikada- shi.
"	... Jat Jatra	... Jaith Sudi 5th.
"	... Gaj-girah	... Jaith Sudi Puno.
"	... Rath Jatra	... Asarh Sudi 2nd.
"	... Daho	... Asarh Sudi Puno.
"	... Pawan Pariksha	... Asarh Sudi Puno.
"	... Hindola	... Sawan Sudi 3rd to Puno.
"	... Mela Birham Kund	... Sawan Sudi 3rd to 9th.
"	... Janam Ashtami	... Bhadon Badi 8th.
"	... Nand Ut Shah	... Bhadon Badi 9th.
"	... Radha Ashtami	... Bhadon Sudi 8th.
"	... Dashera	... Kuar Sudi Parwa to Kuar Sudi 10th.
"	... Sanjhi	... Kuar Sudi Ikada- shi.

Locality.	Name of Fair.	Date.
Brindaban	Parkarma	Katik Sudi Ikadashi.
"	Diwali	Katik Sudi Parwa.
"	Gow Charan	Katik Sudi 8th.
"	Bhatron	Katik Sudi
"	Bihari Janam Ut Shah.	Aghan Sudi 5th.
"	Mela Danji	Aghan Sudi Puno.
"	Baikunth Ut Shah	Pus Sudi 5th.
"	Basant Panchami	Magh Sudi 5th.
"	Phol Dol	Phagan Sudi Ikadashi.
"	Holi	Phagan Sudi Puno.
"	Dol Jatra	Chait Badi Parwa.
"	Kali Daman	Chait Badi 5th.
Sataba Askarpur	Santan Kund	Bhadon Sudi 6th.
Madho Ban, Talban, Kudarban.	Parkarma Jatra.	Bhadon * Badi Ikadashi.
Chhatikra	Garur Gobind	Sawan Sudi Ash-tami.
Manoharpur	Chora-si-ka-Mela...	Katik Badi Parwa to Katik Badi 10th.
Rajpur	Gurukul	Christmas holidays
Gobardhan	Mundya Puno	Asarh Sudi Puno.
"	Dip Malka	Katik Badi Amawas.
Radha Kund	Nahan (Bathing)...	Katik Badi Ash-tami.

10. Cattle Census.

Bullocks	...	...	86,249
Cows	...	...	63,078
Calves	...	...	56,644
He-buffaloes	...	...	12,555
She-buffaloes	...	...	67,917
Buffalo calves	...	...	52,320
Sheep	...	...	61,611
Goats	...	...	45,774

CHAPTER II.

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

1. Art Industries.

Silver Toys.

Gokul, a small town at a distance of six miles from Muttra across the Jumna is known for a long time for its silver toys which mostly represent forms of various birds and animals, domestic as well as wild. They are turned out by a family of Sonars who trace their descent from three men, Kashi, Banarsi, and Ram Dayal, who are said to have come to Gokul from Jaipur and settled there four hundred years ago. These are manufactured at about a dozen shops and sold to the sarrafs of Muttra. A few are purchased by pilgrims visiting Gokul and very rarely are they exported by the Sonars to Bombay, Ahmedabad or Calcutta. They find a sale in Sawan and Bhadon when hordes of pilgrims visit Muttra and Gokul. The designs are crude and stereotyped. The metal of which they are composed is beaten out into thin plates and moulded on a brass model. The different parts of the toys are made separately and then joined together after which the whole is cleaned and polished. The mixed metal used contains less than 50 per cent. of silver; the proportions given are : silver, 7 annas; copper, 8 annas; and zinc, 1 anna. The wages differ widely with the weight of the toy, the lighter the toy, the higher the wages. They are 4 annas to 12 annas a tola, average being 5 annas a tola. The industry is decidedly declining. Two main reasons can be assigned to its decline :—

(1) High level of prices.

(2) Competition with Bombay which has made good progress in the manufacture of similar toys.

2 M. D.

The Sonars failed to suggest any remedy for the revival of the industry.

The total amount of the manufactures would be hardly worth Rs. 10,000. Silver, copper and zinc are purchased by the Sonars from Muttra, Agra and Delhi at the market rate.

A toy takes half day to make and a Sonar earns about Re. 1-8 a day.

2. Building materials.

Stone-Carving.

With the exception of Agra and Benares there is no city in the provinces more beautified by the art of the stone-carver than Muttra. The style of carving predominant at Muttra is almost pure Muhammadan; the patterns are mostly delicate arabesques, amid which an occasional peacock is the only sign of Hindu workmanship.

“ Jali ” work is also carried on to a great extent, and is particularly effective on the balcony screens which adorn the upper stories of the houses in the city. There is no city in these provinces that can compare with Muttra in the beauty of her houses. Even the poorest houses have a stone gateway with a simple ornamentation of rosettes, while the houses of the richer people are decorated with the most intricate and beautiful carving.

There are about 100 first class workmen who practise a flourishing trade both in Muttra city and in other cities such as Hathras, Aligarh and Bulandshahr where rich zamindars require their services.

The finest specimens of modern carving in Muttra are the local museum and the cenotaphs of the Seths in the Jumna Bagh. The former is the work of Yusuf, a Muhammadan mistri and is remarkable for the elaborate intricacy of the carving.

Muttra has been the home of stone-carving from the earliest years, as is shown by the excavations of Buddhist and Jain carvings. Relics of these past ages are scattered all over the district.

At Goberdhan, Mahaban, Brindaban, Gokul and Barsana and other places in the district temples, tanks and chhatris of great beauty and historic interest are to be found. They all

belong to the earlier styles of stone-carving and have little in common with the modern Muttra style. The greatest contrast between the old and new styles is afforded by the two temples which crown the small hill of Barsana. The description given above is from Mr. Crosthwaite's "Monograph on Stone-carving" which was written in 1905.

The industry is fast declining for want of patronage. Most of the best skilled workmen have migrated to other places especially the native states of Rajputana where they receive a hearty welcome and patronage at the courts of the Indian Chiefs. Others have taken to other lines of profession.

The stone used is mostly red sandstone and is easily obtained from Bharatpur, Dholpur, Keroli and Jaipur states in Rajputana. Stone to the value of Rs. 50,000 is imported annually and used locally. The prices are Re. 1 per cubic foot weighing $1\frac{1}{2}$ maunds. A carver charges Re. 1 a day and usually likes to work on time-scale. The work is naturally slow and the articles produced costly. They do not, therefore, command wide patronage.

3. Chemicals.

(i) *Crude Saltpetre.*

The district has got 219 small licensed bhattis where crude saltpetre is manufactured. The work stops during the rains. They are all owned by chamars and scattered all over the district. All of them are worked by less than 10 men. Altogether about 1,500 persons are engaged in the industry. Nitrous earth is scraped off from old inhabited places. A royalty varying from Rs. 20 to Rs. 80 and sometimes more is paid annually to the zamindars. For a description of the process of manufacture and the system of contract the reader is referred to my report on the industrial survey of the Etah district.

About 80,000 maunds of crude saltpetre are manufactured annually in the district. About half of this quantity, i.e. 40,000 maunds is sold to local refiners of saltpetre and half is exported to the neighbouring districts chiefly Agra, Cawnpore and Farrukhabad. The price depends upon the Calcutta market for refined saltpetre. In 1922 it was Rs. 3 to Rs. 4 a

maund. The average earnings of a chamar are about 8 annas a day during the season.

(ii) *Refining of saltpetre.*

The demand for refined saltpetre rose abnormally during the Great War and 14 refineries were working in the district in the year 1917 to 1918, but the demand fell with the cessation of hostilities. The profits were cut very fine with the result that many works closed down. Six refineries are still working at Muttra and give employment to 100 labourers. The average daily earnings of a labourer vary from 6 to 8 annas. Crude saltpetre or "Jharia" is mostly purchased in the district. A little is imported from Etah and Aligarh districts.

Process.—A certain quantity of crude saltpetre is put in a big iron karahi (pan) mixed with water and boiled. Stirring is continued till the whole is dissolved and the requisite consistency of the solution is obtained. The liquid is then transferred to wooden vats and allowed to stand for a week for crystallisation which is induced by dipping straw pieces or by a network of bamboos. When the crystals separate the filtrate is removed and a fresh quantity of crude saltpetre is added to it. The whole process is repeated several times. This method of extraction is known as extraction "in instalments." The other process consists in allowing the liquid to stand for about a fortnight to crystallise. Thus all the possible and available quantity of saltpetre crystallises out in one operation.

The residue which remains in the karahi when the clear liquid is removed from it is treated separately for obtaining salt.

Quality, yield and price.—The yield of refined saltpetre from "Jharia" varies from 30 to 50 per cent. and the quality from 5 to 3 per cent. refraction, both of fine and coarse grain. The yield of salt is about 20 per cent. The rest consists of impurities. The price fluctuates very much due to the fluctuations in the Calcutta market. In 1922 it averaged Rs. 11 a maund.

Outturn and export.—The total outturn in 1922 was about 15,000 maunds out of which about 14,500 maunds was exported to Calcutta and Rajputana. A little is used locally in the manufacture of fireworks.

4. Grains.

(i) Food grains.

The following statement shows the area, production and prices of the principal food grains in 1329 Fasli :—

Crop.	Area in acres.	Produce per acre in maunds.	Price per maund.
		Mds.	Rs. a. p.
Wheat	66,550	14	7 0 0
Barley	35,928	14	4 8 0
Gram	77,386	12	5 0 0
Juar	122,373	5	5 0 0
Bajra	82,637	5	5 0 0
Maize	7,198	6	4 0 0
Sugarcane	7,724	12 of gur	9 0 0

(ii) Non-Food grains.

Crop,	Area in acres	Produce per acre in maunds.	Price per maund.
			Rs. a. p.
Cotton	65,037	2 of cleaned cotton.	27 0 0

5. Hardware.

BRASS AND COPPERWARES.

General.—The manufacture of brass and copperwares is carried on a small scale in the district. The total number of persons engaged in the industry under its different subheads is only 150.

(i) Domestic utensils.

Large utensils of cast style, e.g. tatehra, gagra, thalis and lotas are made by Thateras of Muttra. The system of work is the same as is followed in other districts of the provinces. There is nothing worthy of note. The annual output amounts to about 850 maunds, worth about Rs. 60,000.

(ii) Toys.

Small brass images of Hindu gods chiefly of the infant "Krishna" are manufactured by Thateras, Sonars, Vaishyas and Brahmans. The patterns are archaic and have altered little since the beginning of the present century when most of them were figured in Moor's Pantheon. "Basdeo Katora"—a Hindu traditional and historic imitation—is particularly remarkable. It is a brass conical bowl on the top of which appears "Basdeo" (father of "Krishna") carrying the newly born child in his lap and attempting to cross the furious Jumna in floods of the rainy season. The legend is that the King of Muttra (Kans) was apprised by supernatural means that he will be killed by the eighth offspring of his sister "Deoki" who was married to "Basdeo." The bowl empties itself as soon as the water touches the feet of the child. Equally liked are the magnetic toys "Rukmin" and "Krishna" or "Sita" and "Ramka-khilauna. Rani "Rukmani" had an aversion to the King "Sishupal" to whom her relations were proposing to marry her, and desired to marry "Krishna." Similarly "Sita," the wedded wife of "Ram" had a great aversion for "Ravana," King of "Lanka", who had abducted her by force and wanted to marry her. The aversion is shown in these toys. As soon as "Rukmani" and "Sita" face "Sishupal" or "Ravana" they turn round and begin to face "Krishna" and "Rama" respectively. All these toys are locally sold and taken by the pilgrims to various parts of the country; the prices being between 8 annas to Rs. 2 each.

The total annual outturn is worth about Rs. 10,000.

(iii) Pocket huqqas.

Huqqas of various designs that can be folded and put into pockets are made at Aroa in Mat tahsil of Aligarh district and at Jait in Muttra. Each place has one family only, hence the output is inappreciable. These brass huqqas vary in price from 8 annas to Re. 1 according to the size and design.

(iv) Miscellaneous.

Pandit Ramchandra of Jait, a very skilful artizan, makes fountain pens, independent pens, stoves, locks and huqqas of brass. But the sale of his articles is very restricted for want of advertisement.

The prices are as under :—

Locks	...	Rs. 2	per inch of diameter.
" Rukmani" and " Krishna "	-ka-...	Rs. 10	per dozen.
	khilona.		
Independent pen (brass)	...	12	,, ,,
Independent pen (nickel plated)	...	15	,, ,,
Fountain pen (nickel plated)	...	18	,, ,,
Huqqas	... ..	6 to Rs. 12	per dozen.
Stove	... ..	8	each.

All the above are either sold locally or to the general merchants of Muttra. They are exported by the pilgrims to various parts of the country.

Suggestions.—Broad advertisement about the manufacture and sale of the stoves and independent pens should be resorted to. Then only can the demand be increased.

6. Miscellaneous.

(i) Ink.

Black ink is made at Muttra. Formerly it was made out of soot, of til and sarson oil; now it is made of lampblack obtained from kerosine oil. Ink made from kerosine oil soot is said to be much inferior in quality. There are four shops which manufacture this ink. The total output hardly exceeds 150 maunds per year. It sells at an average of Re. 1 per seer. About a dozen artizans are employed on this industry whose daily wages amount to 8 annas per head.

(ii) Mukat and shringar.

Muttra is famous for the supply and manufacture of mukats and other articles of shringar (masks and articles of decoration). There are at present four small firms which undertake the supply of mukats, Thakurji's shringar and theatrical goods. Some of the articles are imported ready-made from Bombay while others are locally manufactured. The total number of persons engaged by these concerns is about 30 who are paid at an average of 12 annas a day. The annual outturn is nearly worth Rs. 25,000. Prices vary from 2 annas to Rs. 50 per article according to the size, quality and the material used.

(iii) Kanthi.

The district of Muttra has many important centres of religious pilgrims—the most important being Muttra and Brindaban. Pilgrims, visiting these places, when return home take back with them various articles for presentation to their friends and relations, and one of these articles is the kanthi (necklet of beads). The district being a stronghold of Goshains (a sect) whose chelas (disciples) are ordained by the tenets of their faith to wear kanthis. The kanthi is exported in large numbers by the pilgrims, and naturally their manufacture is carried on in Muttra and Brindaban to a very large extent. Kanthis are made of alsi and are used according to the sect to which the disciple belongs, e.g. Rudraksh is worn by a Shawaiti, and Alsi Tulsi by chelas of Goshains and Bengalis while those of Kat (wood) are worn by common folks. The manufacturers are Bairagis and Bengalis; and Sewa Kunj at Brindaban and Bairagpura in Muttra are the places best known for them. Both men and women make them and earn about 8 annas a day.

Prices are—

Alsi 3 pies each.

Sandal, 4 annas each.

Rudraksh, 4 annas each.

The total amount manufactured in a year would be worth Rs. 3,00,000. Most of these are exported to Hardwar and Sorem, etc. Wood is obtained from Benares, Bengal and locally.

(iv) Jail industries.

The following is a list of the industries carried on in the District Jail, Muttra :—

- (a) Manufacture of durries, dosuti, carpets, niwar and money bags, garba dusters,
- (b) Munj mats and ropes,
- (c) Wheat-grinding,
- (d) Oil-pressing,
- (e) Chick-making,
- (f) Chair-caning,
- (g) Lime-making.

(a) *Durries* are made of various sizes and colours. A plain durrie costs Rs. 2-12 a seer while the costs of

a coloured one ranges from Rs. 3 to Rs. 4 per seer, according to pattern.

Dosuti is made in pieces of 38 yards long and 28 inches wide. No $10\frac{1}{2}$ Hathras mill yarn is used. A bundle of 10 lbs. of this yarn costs Rs. 7-6. *Dosuti* is sold at 10 annas a yard.

Carpets are made of different colours. The cost ranges from Rs. 3-8 to Rs. 4 a seer.

Niwar is made of Hathras mill yarn. It is plain as well as coloured. Plain niwar costs Rs. 2-8 a seer and coloured one Rs. 3 a seer.

Net money bags are made of different sizes and the cost ranges from 4 annas to Rs. 2-4 each, according to their capacity. These are made to order from Treasury, Court of Wards, etc. Orders from private firms are also received and complied with.

Garha is made of yarn No. $10\frac{1}{2}$ s and is sold at 7 annas a yard.

(b) *Munj Pounding*.—Each man pounds 15 seers in a day. There are two men on pounding.

Twisting.—There are 24 men employed on this work, each man twist 300 yards in a day.

Matting.—There are 8 men put on this work. Each man prepares $6' \times 2'$ broad mat per day. Mats are made to order from private persons. These are also prepared for prisoners in small size.

(c) *Wheat-grinding*.—Eight flour mills are worked by 16 men. Each grinds 15 seers of wheat and 20 seers of gram per day.

(d) *Oil-pressing*.—Fifteen seers of mustard seeds are crushed every day in one kolhu. One man crushes 5 seers of mustard in a day. It gives 25 per cent. oil and 75 per cent. oil-cake. Oil is crushed for jail consumption. The cake sells at 12 chhataks per rupee.

(e) *Chicks* are made to order. These are either plain or coloured. A plain chick costs 2 annas, 6 pies a square foot and a coloured one 4 annas a square foot. Orders are received from private persons.

(f) *Chair-caning*.—Chairs are received from Government offices for caning. The cost for caning a seat of chair is 10 annas and that of an easy chair is Re. 1-14.

(g) *Lime-making*.—Lime is also made and costs Rs. 35 per 100 c.ft.

(e) *Paper manufacture.*

This industry has been in existence for many years past in this district. Muttra paper was used in Government offices as well as by private firms and individuals. The introduction of mill paper has dealt a death blow to this industry. Now this paper is rarely used by the mahajans for their *bahis* and *khatas* (cash books and ledgers). It is also used for binding *resham* (silk) *guchchhis* (hanks) sold by the Punjabi merchants. About 100 years back there were about 300 factories giving employment to about 7,000 men and manufacturing paper worth Rs. 14,00,000 annually. At present there are only seven factories giving employment to not more than 70 persons and producing paper to the value of Rs. 24,200 annually.

Formerly the paper was made of san hemp; at present it is made of waste paper only, which is purchased from Aligarh Postal Press and also from various other presses at rates varying according to quality from Re. 1 to Rs. 3 per maund.

Formerly very fine paper used to be made—1 gaddi weighing 4 seers only. Now a gaddi usually weighs 10 seers.

One gaddi contains 10 quires each with 24 sheets of paper. It costs the manufacturer about Rs. 5 and is sold for Rs. 7. Labourers are paid at an average of 6 annas per day.

Process.—*Raddi* (waste paper) is put in masonry pits full of water, and is allowed to remain steeped under it for about three days. It is then taken out and well kneaded under feet, say for three hours, taken to the Jumna river and well washed there in the flowing water. Water is then squeezed out. The pulp is again mixed with water and stirred thoroughly for two hours to form a paste. This is then spread on *pardahs* (frame work) of *seenkh* which are supported on bamboo frames; water drains off through the net work, sheets are formed and placed one upon another on the ground and pressed with a stone slab. Finally they are either hung on walls or put on the ground for being dried. This is called “*kachcha*” paper.

“*Pucca*” paper is sized with fine wheat flour and rubbed with a stone slab to give it a polish.

The description is only of academical interest now, as the industry is doomed in competition with mill products.

(vi) Utilization of slaughter-house bye-products.

(a) *Bones*.—Bones are available to the extent of 4,000 maunds in the district. The chamars and others who collect them are paid at the rate of Re. 1-2 per maund while the contractors export them to Bombay, Sealdah and Agra at Rs. 2 per maund. The railway freight to Agra is 1 anna 5 pies per maund, to Sealdah 12 annas 2 pies per maund and to Bombay it is Re. 1-2-3 per maund.

(b) *Horns*.—No use is made of cow or bullock horns but those of buffaloes are exported to Bijnor to the value of Rs. 200 annually for the manufacture of combs.

(c) *Fat*.—Fat to the value of about Rs. 600 annually is sold locally to the cantonments.

(d) *Gut*.—Gut of the value of Rs. 100 a year is locally sold to the khatiks and carders.

(e) *Blood*.—Blood is wasted, i.e. no use is made of it.

7. Other industries connected with edibles.

(1) *Dairy*.—*Butter*—Butter is made at about six places under the control of, and for the benefit of, the Keventer's dairy at Aligarh. Cream separators are worked by the Ahirs and Ghosis who supply cream to the above places where it is turned into butter. This butter is daily exported to the head office at Aligarh. Each place has got a butter machine turning about 20 seers of butter every day.

Besides the above branches of Keventer's dairy, Muttra has a dairy owned by Shaikh Rahim Bukhsh. It has a farm of 200 cattle and employs 12 labourers paid at an average of Rs. 25 a month. In order to meet the demand of the cantonment and the civil lines about 25 seers of butter is daily manufactured in this dairy. Butter is sold at Re. 1-4 and milk at 2 annas per pound. It is interesting to note here that the Government cattle-breeding farm at Madhari Kund (Muttra) sells milk at 12 seers a rupee. It will be a more economical arrangement for both the cantonment and the farm if the former could arrange to get its supply of milk from the farm. If such arrangement is made, the farm could, perhaps, supply the butter also by working a small machine such as is kept at the branches of Mr. Keventer's dairy.

(2) *Pera and khurchan*.—Muttra has a speciality in the manufacture of *pera* and *khurchan* (preparations from milk), which are exported in large quantities by *jatris* (pilgrims). About one dozen *halwais* (sweet sellers) are engaged in the industry. The speciality of the Muttra *pera* is that it can be kept for a considerably long time without getting rancid. *Peras* sell from 12 annas to Re. 1-4 a seer according to quality, while the price of *khurchan* varies from Re. 1-4 to Rs. 3 per seer. The quality has considerably deteriorated of late owing to the shortage of milk and rise in its price. The business can be improved by an improvement in the quality of the products.

(iii) *Ice*.—An ice factory was started at Muttra in 1921 by Mr. Shujan Singh of Loha Mandi (Agra). It has about 20 workmen and is worked by a steam engine of 24 H. P. The factory works from March to October and produces at an average of 150 maunds of ice per day. Average price of ice is Re. 1 per maund. The factory is not working to its full capacity as the output is restricted to the local consumption. There is room for expansion if markets outside the district could be secured.

8. Pottery.

Ordinary earthenwares are made everywhere but seven families of Vaishya Thakurs known as Hatariya or Bardias manufacture toys. These families have about 50 members. The toys are mostly figures of birds like parrots, magpie, animals, human or dieties and are meant for local consumption only. They are made of ordinary clay taken from Pannapur tanks on payment to the zamindars of Re. 1 annually as rent plus cost of clay at 4 annas per maund. They are then baked and coloured with chalk brought from Gwalior or Ajmere, or with black soot. A man earns about Re. 1 a day by his manufacture.

9. Textiles.

A.—COTTON.

(i) *General*.

The district produces about 2½ lakh maunds of kapas (seed cotton) annually. About 137,000 maunds was ginned in the district which has six gins, two at Muttra and four at Kosi

Very little is hand-ginned. The rest is exported to Hathras, Gurgaon and the Punjab, from Kosi, Muttra, Mahaban and Sadabad. The six ginning factories have got a total of 240 single and 26 double roller gins, 4 presses, 495 labourers and 9 boilers. The factories at Kosi are working on a system of pool distributing the profits among themselves. The charges at Muttra are Rs. 2-8 per maund for ginning and Rs. 6-9 per bale of 4 maunds 35 seers for pressing, while at Kosi they are Rs. 2-12 per maund for ginning and Rs. 7 per bale for pressing. The factories gin and press their own kapas as well as work on commission. Ginned cotton is exported to Agra, Karachi and Bombay.

(ii) *Weaving.*

(a) *Garha.*—There are about 900 families of weavers in the district who are partly engaged in cloth weaving and partly in agriculture. There is no big centre of weaving though in a few places like Bajna, Lohban, Bisawar and Sadabad garha and khaddar weaving is carried on on a small scale. The total annual outturn is estimated to be about 50,000 pieces weighing about 2,500 maunds, worth about $1\frac{1}{2}$ lakhs of rupees. The pieces are $\frac{1}{8}$, $\frac{1}{6}$ and 1 yard in width and 12, 13, 15 and 18 yards in length. The price varies from Rs. 2-8 to Rs. 4-8 and Rs. 5 a piece. Both mill and hand spun yarn is used. Mill yarn of counts No. $10\frac{1}{2}$ s is imported from Hathras and Agra at Rs. 7-10 per bundle of 10 lbs. The average daily earning of a weaver family from this source is 10 annas to Re. 1. Door-to-door selling is the usual practice. Market days afford some facilities for the sale of swadeshi cloth.

(b) *Durrie and carpet.*—About a dozen Musalman Julahas in Matia Darwaza, Muttra, weave durrries and two or three weave carpets. The local dealers give them yarn and dyes and pay them weaving charges at the rate of 8 to 10 annas a seer. The usual dimensions of a durrie are $2 \times 1\frac{1}{2}$ yard or $2\frac{1}{2} \times 1\frac{1}{2}$ yards. Average daily wages of a weaver amount to Re. 1 per head. Mostly mill yarn of counts Nos. 2s and 4s is used. There is very little export of Muttra durrries which, almost all, are consumed locally. The annual outturn is about 1,500 durrries worth Rs. 7,500.

(c) *Nisar and cotton rope.*—This is one of the most important industries of the district and gives employment to about 150 persons, all weavers. The work is centred in the

city of Muttra. Mostly mill spun yarn of Agra and Hathras mills is used. The dealers of Dori Bazar advance yarn to the weavers and pay wages at the following rates :—

Rupee 1 for twisting 1 bundle (10 lbs.) of yarn into dori or cotton rope.

Rupee 1-12 to Rs. 2 for weaving 1 bundle (10 lbs.) of yarn into niwar.

Average daily earning of a weaver is about Re. 1. About 40 yards of dori with a thickness of $1\frac{3}{4}$ inch, such as is used in tents, is manufactured out of 1 bundle of yarn weighing 10 lbs. It sells at Re. 1-6 per seer.

Niwar from $2\frac{1}{2}$ inches to 3 inches in width sells for Re. 1-12 a seer whereas the District Jail sells at Rs. 2-8 a seer. Dori and niwar of other sizes are twisted or woven to order.

Outturn and export.—Three men working together consume 4 bundles or 40 lbs. of yarn every day. The annual outturn of 150 persons for 250 working days thus comes to $\frac{150 \times 250 \times 0}{4}$ about 6,100 maunds in weight, worth about Rs. 3,80,600. The amount of yarn consumed is about 6,480 maunds making an allowance for wastage which is about 1 chhatak per seer.

A considerable quantity which is about 5,000 maunds is annually exported by the dealers to the Punjab, Delhi, Lahore, Amritsar, Rawalpindi, Peshawar, Lucknow and Cawnpore. The rest is partly consumed locally and partly exported to various places by the *jatris* (pilgrims).

(iii) Printing.

Printing of cloth is one of the chief industries of the district and gives employment to about 400 persons. Printers are all Hindu Chhipis. The most important factory is that of Lala Janki Das at Gaughat, Muttra, where 20 persons are engaged. The chief centres of the industry are Muttra, Mat, Kolahas, Chhata and Brindaban. Fine fabrics like muslin are printed at Muttra alone while other places print only on garha, gazi and other coarse fabrics.

Cloth is imported from Ahmedabad, Baroda, Baroach and Bombay to the value of about Rs. 10,00,000 a year by the dealers. Alizarine colours worth about Rs. 4,000 are imported from Bombay.

Cloth and dyes are supplied by the dealers to the Chhipis who are paid printing wages by piece-work at the rate of 5 annas 3 pies per *than* (piece) 20 yards long, or Rs. 9 per *tamia* (10 pieces) or Rs. 13 per *tamia* of *sharbati* (fine muslin). Saris, angochas, dupattas and dhoti joras are mostly printed. The length of a sari varies from $4\frac{1}{2}$ to 5 yards and breadth from $1\frac{1}{2}$ yard to $1\frac{9}{8}$ yards.

The process of work is fully given in Mr. Silberrad's "Monograph on Cotton Fabrics" and in Mr. Hadi's "Monograph on Dyeing and Printing." Blocks are made of babul wood at Muttra by the carpenters known as Bhandgharas. Their price varies from 10 annas to Rs. 2 each according to the fineness of the design. The combination and manipulation of dyes is given in Mr. Hadi's "Monograph on Dyes and Dyeing."

Prints to the value of about Rs. 10,00,000 are annually exported to Bombay, Ahmedabad and Gujrat side from Muttra. They are taken in numbers by the pilgrims as presents to their friends.

The selling price of an ordinary dhoti jora or sari varies from Rs. 5 to Rs. 7 according to the quality of cloth and the fineness of the print. A fine jora sells for Rs. 10.

The industry is on the decline which may be ascribed to (a) the general rise in prices, (b) the swadeshi and garha movement which has reduced the demand of fine muslin printed saris at Bombay, Ahmedabad and Gujrat which used to be the chief places of export from Muttra.

B.—WOOL.

Blankets.

The district has about 300 families of gadariyas but most of them have given up their hereditary profession and have taken to other pursuits, e.g. stone-carving, masonry, private and public service. Only about a dozen families are still rearing sheep. These families also weave coarse blankets.

The district has 60,000 sheep which at an average of $\frac{3}{4}$ seer wool per head would give about 1,125 maunds of wool in a year. A dozen families consume about 300 maunds and the rest is exported to Meerut and Muzaffarnagar districts. The district has both gadariyas and wool but finds it more

profitable to export wool than weave blankets as coarse blankets do not pay.

The usual dimensions of a coarse kammal are $3 \times 1\frac{1}{2}$ yards. It weighs from $2\frac{1}{2}$ to $2\frac{1}{2}$ seers and sells for Rs. 3 to Rs. 5-8. Women help in spinning and sizing. If not sold locally the blankets are taken to the nearest market for sale. Average daily earning of a family is 8 annas.

The art of weaving better blankets is not known to the gadariyas. Commercial demonstrations of better methods of weaving and milling would improve the industry. Muttra being close to Rajputana can easily get wool from there, should demand increase.

10. Wood work.

Carpenters may be seen everywhere doing their business as elsewhere in these provinces but one mistri (skilled workman) at Muttra manufactures wooden pens from last year. He keeps one or two apprentice assistants who have also learnt the art but are not so proficient as the headman. The pens are mostly made of kadam which is obtained locally and occasionally of sandal wood. Sandal pens are made to order when the customer has to supply the wood to the carpenter and pay him his wages which come to about Rs. 2 a day. Kadam wood pens are sold to the general merchants or stationers at the rate of Rs. 9 per gross. The daily outturn is about $3\frac{1}{2}$ dozen pens.

The industry is in its infancy and needs broad advertisement and patronization. Kadam wood is available in fairly large quantities hence, if properly organised, the work can easily expand.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

1. *Niwar and Dori*.—Muttra commands a large sale of its niwar and dori but there is no proper factory as yet. There are good prospects for an enterprising small capitalist to undertake the work on modern business lines resorting to broad advertisement. The outturn can be increased by the introduction of hand machines for twisting dori.

2. *Cloth printing*.—The district still possesses some reputation for its special prints. A properly organised factory on co-operative lines will surely revive it. It should start stencil printing by recruiting expert labour from the Dyeing School, Cawnpore.

3. *Saltpetre Manure*.—Muttra manufactures about 80,000 maunds of crude saltpetre annually. Half of this is exported in the crude state and the rest is exported after being refined in the district. The soil of Muttra is poor for rich crops. Attempts should be made to manufacture saltpetre manure to improve the quality of the soil for the cultivation of richer crops like sugarcane and wheat.

4. *Stoves and Fountain pens*.—Pandit Ram Chandra of Jait—a skilful mechanic—makes nice stoves and fountain pens but the industry is not known outside due to the ignorance of doing the work on proper lines. A literate small capitalist should come forward to start a proper factory by engaging the mechanic. This is surely a profitable undertaking and the one which needs patronization. The demand for such products has already been created; and, provided the locally made article is up to the mark a difficulty about its sale should not arise.

5. *Gut-making*.—The demand of good gut suitable for tennis and badminton rackets is daily increasing. Muttra has got a big cantonment whence the raw material can easily be obtained by securing the contract for the purchase of sinews and intestines. The gut industry does not require any big scheme. It can easily be started by a person knowing the art. If necessary the expert labour can be recruited from Sialkot.

CHAPTER IV.

STATISTICS.

1. Silver toys.

Raw materials.—Silver, copper, and zinc.

Amount annually consumed.—

Silver.—5,468 tolas, worth about Rs. 5,468 at Re. 1 per tola.

Copper.—6,250 tolas, worth about Rs. 195 at Rs. 2-8 a seer.

Zinc.—782 tolas, worth about Rs. 5 at 8 annas a seer.

Place of origin.—Chiefly from Delhi and Agra.

Manufacture.—On a cottage industry basis by the sonars as a subsidiary work.

Number of persons employed.—Five families.

Wages.—5 annas per tola.

Daily earnings of a sonar.—About Re. 1-8.

Daily outturn.—About 2 toys, i.e. 5 tolas in weight.

Annual outturn.—About 12,500 tolas or Rs. 10,000 in value.

Places of export.—Almost all parts of India but chiefly Ahmedabad, Bombay and Calcutta.

System of advertisement.—The toys are taken to the above places by the pilgrims.

2. Stone carving.

Raw material.—Red sandstone.

Value.—Rs. 50,000 annually at Re. 1 per c. ft.

Places of origin.—Bharatpur, Dholpur Karoli and Jaipur.

Manufacture.—Cottage industry.

Number of persons.—100 first class carvers.

Wages.—Rupee 1 a day.

Articles carved.—Mostly balconies of local houses.

3. Saltpetre.

(i) *Crude Saltpetre.*

Raw material.—Nitrous earth from the neighbourhood.

Royalty.—Rupees 20 to Rs. 80 a year.

Manufacture.—On a small factory basis.

Number of bhattis.—219.

Number of persons engaged.—1,500.

Wages.—8 annas a day.

Outturn—

Quantity.—80,000 maunds approximately.

Value.—Rupees 2,80,000 at an average of Rs. 3-8 a maund.

Exports—

Quantity.—40,000 maunds approximately.

Value.—Rupees 1,40,000.

Places of consignment.—Agra, Cawnpore, Farrukhabad.

Local consumption.—

Quantity.—40,000 maunds approximately.

Value.—Rs. 1,40,000.

Used.—For refining locally.

(ii) *Refining of saltpetre.*

Raw material.—Crude saltpetre.

Quantity.—30,000 to 50,000 maunds.

Value—

(i) Rupees 1,05,000.

(ii) Rupees 1,75,000.

Place of origin.—Local bhattis.

Manufacture.—On a small factory system.

Number of refineries.—Six.

Number of persons engaged.—100.

Wages per head.—6 annas to 8 annas a day.

Annual outturn.—15,000 maunds.

Quality.—3 to 5 per cent. refraction.

Value.—About Rs. 1,65,000 in 1922 at Rs. 11 a maund.

Export.—About 14,500 maunds.

Places of consignment.—Calcutta and Rajputana.

Local consumption. About 500 maunds for fireworks.

4. Brass and copper wares.

- Raw materials.*—Refuse brass and copper.
Quantity.—About 1,000 maunds.
Value.—About Rs. 35,000.
Places of origin.—Agra and Delhi.
Manufacture.—On a cottage industry basis.
Number of persons engaged.—150.
Wages.—Rupees 3. to 3-4 per maund.
Turning charges.—Rupees 2-8 per maund.
Outturn.—850 maunds of vessels, e.g. tatehra, gagra, thali and lota.
Places of export.—Various parts of India.
Marketing system.—Through pilgrims who visit the holy Muttra.

5. Paper manufacture.

- Raw material.*—Waste paper.
Quantity.—About 900 maunds.
Value.—About Rs. 1,800.
Place of origin.—Aligarh Postal Workshop.
Manufacture.—Paper gaddis, each weighing 10 seers and containing 10 quires of 24 sheets each.
Number of factories.—Seven.
Number of persons engaged.—70.
Wages per head.—6 annas a day.
Annual outturn.—
Quantity.—3,460 gaddis weighing about 850 maunds.
Value.—Rupees 24,200 at Rs. 7 per gaddi.

6. Ink manufacture.

- Raw materials.*—Soots of sesamuns and linseed oils, and kerosine oil.
Quantity and value.—Inconsiderable and indefinite.
Manufacture.—On a cottage industry basis.
Number of shops.—Four.
Number of persons engaged.—12.
Wages per head.—8 annas a day.
Outturn.—
Quantity.—150 maunds per year.
Value.—Rupees 6,000 at Re. 1 per seer.

7. Textiles.

(i) Cotton ginning and pressing.

Raw material.—Kapas.

Quantity.—137,000 maunds.

Value.—Rupees 5,48,000.

Places of origin.—Local.

Manufacture.—Factory basis.

Number of ginning factories.—Six.

Number of persons employed.—495.

Wages.—12 annas per head per day.

No. of gins.—240 single roller and 26 double roller gins.

Number of presses.—Four.

Number of boilers.—Nine.

Outturn of cotton.—45,700 maunds.

Value.—Rupees 12,33,900 at Rs. 27 a maund.

Places of consignment.—Agra, Karachi and Bombay.

(ii) Cloth weaving.

Raw materials.—Mill and hand spun yarn.

Quantity.—2,500 maunds, worth Rs. 1,53,700.

Places of origin.—Hathras and Agra.

Manufacture.—On a cottage industry basis.

Number of persons.—900 families.

Wages.—Average daily earnings of a family vary from 10 annas to Re. 1.

Annual outturn.—

Number of pieces.—50,000.

Weight.—2,500 maunds.

Value.—1½ lakhs of rupees.

(iii) Durrie and carpet weaving.

Raw material.—Mill and hand spun yarn.

Quantity.—80 maunds.

Value.—Rupees 4,800.

Places of origin.—Agra and Hathras.

Manufacture.—Cottage industry.

Number of persons.—12 families.

Weaving charges.—8 to 10 annas a seer

Daily earnings per head.—Rupee 1.

Outturn—*Number.*—1,500.*Weight.*—75 maunds.*Value.*—Rupees 7,500.*(iv) Niwar and dori-weaving.**Raw material.*—Mill yarn.*Quantity.*—6,480 maunds.*Value.*—Rupees 3,98,500.*Places of origin.*—Hathras and Agra.*Manufacture.*—Cottage industry.*Number of persons.*—150.*Wages.*—Rupee 1 per bundle of yarn for dori and Re. 1-12 to Rs. 2 per bundle of yarn for niwar.*Average daily earnings per head.*—Rupee 1.*Annual outturn.*—*(i) Weight.*—6,100 maunds.*(ii) Value.*—Rupees 3,80,600.*Exports.*—*Weight.*—5,000 maunds.*Value.*—Rupees 3,12,500.*Chief places of consignment.*—The Punjab, Delhi, Amritsar, Lahore, Rawalpindi, Peshawar, Lucknow and Cawnpore.*(v) Cloth printing.**Raw materials.*—Fine muslin and coarse cloth, e.g., garha and gazi, alizarine.*Amount.*—Cloth to the value of about Rs. 10,00,000 a year. Alizarine dyes to the value of about Rs. 4,000 a year.*Places of origin.*—Cloth from Bombay, Ahmedabad and Baroach. Dyes from Bombay.*Manufactures.*—Printed cloth, mostly angochhas, saris and dopattas.*Annual outturn.*—Rupees 10½ lakhs in value.*Annual export.*—Rupees 10 lakhs in value.*Places of export.*—Chiefly Bombay, Ahmedabad and Gujrat side.*Number of persons.*—400 persons in all.*Wages.*—The work is done on a cottage industry basis. Printing wages are paid by piece as follows :—

5 annas 3 pies per piece of 20 yards,

Rupees 9 per tamia (10 pieces) of coarse cloth.

Rupees 13 per tamia (10 pieces) of sharbati, i.e., fine muslin.

Marketing system.—The dealers supply the cloth and dyes to the Chippis and pay them their wages. Pilgrims when going home from Muttra purchase the prints from the dealers.

(vi) *Wool and blankets.*

Raw material.—Sheep wool.

Quantity.—1,125 maunds.

Value.—Rupees 28,200.

Place of origin.—Local.

Exports.—

Quantity.—825 maunds.

Value.—Rupees 21,000.

Places of consignment.—Meerut and Muzaffarnagar districts.

Local consumption—

Quantity.—300 maunds.

Value.—Rupees 7,500.

Manufacture.—Cottage industry.

Number of persons engaged.—12 families.

Wages.—8 annas a day.

Outturn—

Number.—2,000.

Value.—Rupees 8,000 at Rs. 4 each.

(vii) *Statement of ginning factories.*

(a) *Keshab Deo Gopi Nath Ginning Factory, Muttra.*

Year.	No. of gins.	No. of presa.	Boilers.	Labour.	Outturn of kapas in maunds.
1922-23 ..	52	1	2	100	20,000

(b) *Bankelal Niranjan Das Ginning Factory, Muttra.*

Year.	No. of gins	No. of presa	Boilers.	Labour.	Outturn of kapas in maunds.
1922-23 ..	29 double rollers	1	1	50	22,000

(c) New Mofussil Company, Limited Kosi (Chatta tahsil).

Year.	No. of gins.	No. of press.	Boilers.	Labour.	Outturn of kapas in maunds.
1922-23 ..	67	1	2	125	21,000

(d) Rati Ram Zaharmal Ginning Factory, Kosi (Chatta, tahsil).

Year.	No. of gins.	No. of press.	Boilers.	Labour.	Outturn of kapas in maunds.
1922-23 ..	54	1	2	120	40,000

(e) Bhawani Ram Roshanlal Ginning Factory, Kosi (Chatta tahsil).

Year.	No. of gins.	No. of press.	Boilers.	Labour.	Outturn of kapas in maunds.
1922-23 ...	19	..	1	80	10,000

(f) Sukhanand Shyam Lal Ginning Factory, Kosi (Chatta tahsil).

Year.	No. of gins.	No. of press.	Boilers.	Labour.	Outturn of kapas in maunds.
1922-23 ..	48	..	1	70	24,000

CHAPTER V.

DIRECTORY.

1. List of banks.

The Imperial Bank of India Limited, Muttra.
 The District Co-operative Bank, Limited, Muttra.
 The Allahabad Bank Limited, Muttra.
 Incha Ram Bank, Limited Messrs. Incha Ram and
 Company, Military Bankers, Sadr Bazar, Muttra Cantonment).
 The Amritsar National Bank, Limited, Muttra.

2. List of technical schools.

Prem Maha Vidyalaya, Brindaban.
 Commercial Academy, Kishori Raman High School,
 Muttra.

3. List of calico printers.

Janki Das Factory, Brindaban Darwaza, Muttra.
 Ganeshi Lal Mewa Ram, Naya Bazar, Muttra.
 Baldeo Das Chimmanlal, Naya Bazar, Muttra.
 Gangoli Mal Ganeshi Lal, Naya Bazar, Muttra.
 Harsewak Basdeo, Naya Bazar, Muttra.

4. List of niwar and durrie weavers.

Vishnu Das Deokinandan, Dori Bazar, Muttra.
 Kanhaiyalal, Dori Bazar, Muttra.

5. List of brassware dealers and manufacturers.

Khalia Mal Badri Das, Chatta Bazar, Muttra.
 Muttra Das Dwarka Das, Chauk, Muttra.
 Kishori Lal Chhaganlal, Swami Ghat, Muttra.
 Bansidhar Gordhan Das, Swami Ghat, Muttra.

6. Mukat and shrinagar maker and dealers.

Messrs. Sunder Sirinagar & Company, Ghia Mandi, Muttra

7. List of medicines and haberdashery dealers.

Messrs. Sukha Sancharak & Company, Holi Darwaza,
 Muttra.

Messrs. L. P. Nagar & Company, Ghia Mandi, Muttra.

8. Picture merchants.

Messrs. Friends & Company, Askund Bazar, Muttra.

9. Ice factory.

Muttra Ice Factory, near railway station, Muttra.

10. List of cotton ginning factories.

Kesho Deo Gopinath, Bharatpur Darwaza, Muttra.

Bankelal Niranjani Das, near Railway station, Muttra.

New Mofussil Company, Limited, Kosi (Chatta).

Rati Ram Jaharmal, Kosi (Chatta).

Bhawani Ram Roshanlal, Kosi (Chatta).

Sukhanand Shyam Lal Kosi (Chatta).

11. List of saltpetre refiners.

Gauri Shankar, Delhi Darwaza, Muttra.

Hardeo Das Pyarelal, Shahganj, Muttra.

Shambhu Ram Lachhmi Narayan, Dig, Muttra.

Mihin Lal, Dig, Muttra.

Badri Das, Dig, Muttra.

Chunni Lal, Dig, Muttra.

CHAPTER VI.

[Note on Printing industry in Muttra by H. B. Shroff, Esq., B.Sc. A.M.S.T., Principal, Government School of Dyeing and Printing, Cawnpore].

MISCELLANEOUS.

Type of printing.—Printing is an old established industry in Muttra. It is practically a cottage industry though several karkhanas employing a number of Chhipis have grown up. The work turned out resembles the Jaipur printing, but is of a much inferior character both as regards nature of designs and colours used. The work carried out consists of saris and kerchiefs mostly. The annual total output is worth Rupees nine to ten lakhs. Muslin cloth and garha are principally used for printing upon, but cheap work is also carried out—particularly for kerchiefs—on old, recovered dhoties, muslins, etc., which are washed and bleached before printing.

Printers' outfit.—The equipment used is very simple. A low slanting table covered with a cloth pad serves for placing the cloth to be printed. A colour pad consists of a circular earthenware pot or dish in which a thathia made of thin bamboo strips tied together is placed which serves as a colour sieve. This is covered with a small piece of blanket. The colour paste put in the tub feeds the pad from which the blocks, on pressing, take up the necessary quantity of colour. The blocks are made of wood only and are carved by block cutters. The method of printing consists in pressing the block on the colour pad by which the raised portions pick up the colour. These are then placed on the cloth and thumped by hand so that the colour paste is transferred on to it.

Methods of printing.—The principal shades produced are black, red, brick-red, chocolate and *mehndi* (reddish yellow). For blacks two methods are in use. Aniron tannin black is produced by padding the cloth in an extract of tanning materials such as myrobalans or *anar* (pomegranate rind). It is then printed upon with a thickened solution of iron acetate (*kosoda*) which is prepared by treating molasses with filings of iron.

Aniline black is also printed in single designs. The oxidising agent used is potassium chlorate. After printing, the goods are exposed to the sun when "ageing" takes place. The aniline salt is oxidised producing a jet black. The thickening materials are removed by washing the pieces in clear water, the work of washing being done by the dhobi. This work is, however, stopped in the rainy season due to absence of sunlight.

Alizarine is printed on aluminium and iron mordants, producing red and violet shades respectively. Mixtures of the above two mordants are used to produce a gradation of shades between red and chocolate. Chromium is also used by a few as a mordant for alizarine. The alizarine colours are produced by the dyed style. The mordant, suitably thickened, is printed and fixed. The goods are next sent to dhobi, for washing away the thickenings and the unfixed mordant. The goods are next dyed in a bath containing alizarine and the colour is produced wherever the mordant was previously printed. They are again sent to the washerman who besides washing "clear" the goods by repeated exposure to the sun in the moist condition. The white (unprinted portions of the prints) which are tinted a little in the dyebath, become cleared.

Mehndi or iron buff is produced by printing upon the cloth with thickened ferrous sulphate to which a little geru is added to show up. The prints are then passed through an alkali, generally lime water, which precipitates and fixes iron oxide.

Condition of the trade.—The prints are mostly purchased by the pilgrims who take them away as 'pershad' from Shri Krishna's birth place and present them to friends and relatives on their return home. They are also exported to nearly all the parts of India, especially to the Punjab and Bombay Presidency. The designs are very crude and simple. The blocks are used till they become completely useless and out of shape. No new designs are introduced and in the whole of Muttra there are only a couple of block cutters. The condition of printers is pitiable and they are just able to earn sufficient to keep body and soul together. The profits, or a large share of them, go to the dealers and merchants who supply them with the cloth and who take and sell the prints when ready. For the progress of the trade attention needs to be paid more and more to the improvement and production of new designs.

The kerchiefs with names of "Ram Ram" or with flower designs that are generally printed do not so much appeal to the devout buyers visiting Muttra. They are often prepared to pay more if better designs can be procured but go away disappointed buying what they can get. Designs depicting Krishna's life in all its different phases would be just the sort of thing that would suit a place like Muttra.

The methods of printing done can also be modified. In the printing of alizarine red, no oil or oil substitutes find use with the result that the colour produced is inferior. The method used also involves a number of operations which can be reduced by substitution of the "steam style" of printing.

The borders of the cloth are sometimes printed with hand by pota to produce broad plain outline all round. Use of a dummy block of the width the border is required to be, covered over with a stretched piece of flannel, would result in the work being carried out in a much shorter time with better effect.

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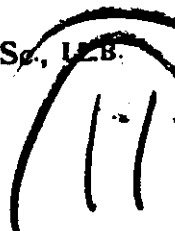
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Report on the
INDUSTRIAL SURVEY
of the United Provinces

Muzaffarnagar District

By
MUHAMMAD ZIA-UR-RUB, B.Sc., L.B.



ALLAHABAD:
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FOREWORD.

MUZAFFARNAGAR is a rich agricultural district which grows sugarcane in about one-third the area covered by its non-food crops. The area under sugarcane is exceeded only by wheat and gram. But notwithstanding the production of over 55 lakh maunds of *gur* there is no sugar factory run by power on modern lines. Sugar is successfully manufactured direct from the cane in several other districts of the province, and there appears to be no particular reason why such factories should not be tried in Musaffarnagar. Better transport facilities may perhaps be required, but they have to be provided if industries are to be developed. For pressing cane, Nahan State supplies kolhus and karhais, because there is no foundry in the district. Similarly the district exports 80,000 maunds of seed cotton every year mostly to other provinces, but has no power gin. Musaffarnagar is famous for its wheat and produces over 33 lakh maunds, of which no small portion is exported from the district; but it has to import maida (fine flour) from Delhi.

The main industry of the district is blanket weaving, for which it requires 8,000 maunds of wool and produces only 500. The rest has to be imported from the Punjab. A major portion of the imported wool is carded and spun in Aligarh and other districts. A few curtains are made in the district, but mirror pieces are imported from the Punjab; similarly it has to depend upon other provinces for its supply of raw materials in order to manufacture a few domestic brass utensils.

It will thus be seen that it is dependent on other provinces for the supply of its needs, though it exports raw material necessary for the production of articles which it needs.

Chapter III of the report gives the recommendations of the divisional superintendent for developing the industries. Government action is required in—

- (a) organizing co-operative societies for—
 - (i) Kamaliyas, i.e., blanket weavers,

(b) arranging to give demonstrations of improved methods of—

- (i) Tanning,
- (ii) Dyeing and printing,
- (iii) Rope twisting by improved appliances.

Every help deserves to be given to persons desirous of starting (a) mills for carding or spinning wool or finishing blankets, and (b) a foundry for manufacture of kolhus and karhais.

Chapter I of the report gives the general features of the district and lists of ferries, roads, canals, railways, markets, etc., while a description of the existing industries will be found in Chapter II. Chapter IV is a collection of the statistics, and Chapter V a directory of dealers and manufacturers.

The report has been revised by Mr. S. T. Gadre, Industrial Chemist to Government, to whom my special thanks are due.

Thanks of the department are due to Messrs. P. W. Marsh and G. K. Darling, District Officers, Muzaffarnagar, who rendered willing advice and supplied valuable information, as also to the following gentlemen who have helped in the survey work :—

- (1) B. K. Ghare, Esq., of the Agricultural College, Cawnpore.
- (2) Mohammad Askari, B.A., L.T., Naib-Tahsildar, Jansath.
- (3) N.S. Rustomji, Esq., Proprietor, Provincial Manufactures, Muzaffarnagar.

CHAMPA RAM MISRA.

The 25th March, 1923.

CHAPTER I.

INTRODUCTION.

1. *General features of the district.*—The district of Muzaffarnagar is one of the richest portions of the Doab. It is bounded on the north by Saharanpur, south by Meerut, east by the Ganges, and west by the Jumna. It is provided with good irrigation, and is an important centre of exports of cane sugar and foodstuffs, chiefly wheat. With the exception of blanket weaving there are few industries worth notice. There is no mill excepting a few oil-engines for wheat flour grinding, but there is ample field for utilising its raw material for developing industries.

2. *Area.*—1,662 square miles.

3. *Population.*—Population in 1921 was 794,265.

4. *Ferries.*

(a) *Public.*

River.	Name of ferry.
Ganges ...	Matwali or Rauli Ghat.
Do. ...	Dharampur.
Do. ...	Balawali Ghat.
Jumna ...	Mavi near Kairana-Paniput Road.
Do. ...	Andhera near Bidauli-Shamli-Karnal Road.
Hindan ...	Arnaich.
Do. ...	Budhana.
Kali ...	Anchauli on Khatauli-Budhana Road.
Kirsani ...	Rajpur Ghat on Budhana-Kandhla Road.
Do. ...	Thana Bhawan Ghat on Thana Bhawan-Muzaffarnagar Road.
Do. ...	Jalalabad Ghat on Jalalabad-Lohari Road, Solani river ferry near Sikri.

(b) *Private.*

Kali nadi ...	Maulheri.
Do. ...	Morkalinka.
Hindan ...	Shikarpur.

5. Roads.

A.—Provincial.

Metalled.

	Length.
Meerut-Muzaffarnagar-Roorkee Road ...	35 miles.
Feeder from above to Khatauli station ...	1½ furlongs.
Mansurpur railway feeder ...	2 „
Muzaffarnagar to Bijnor ...	21 miles.

B.—Local.

First class roads.

Kairana to Shamli ...	7 miles.
Railway feeder, Muzaffarnagar ...	1 mile.
Muzaffarnagar to Shamli ...	24 miles.
Jansath to Khatauli ...	9 „

Second class roads (local).

Baheri railway feeder ...	2 furlongs.
Muzaffarnagar to Saharanpur ...	6½ miles.
Muzaffarnagar Circular Road ..	1 mile.
Muzaffarnagar-Budhana Road ...	18 miles.
Saharanpur to Banat ...	14 „
Khatauli to Budhana-Kandhla ...	29 „
Pur to Dhamat and Gordhanpur ...	13 „
Gordhanpur to Alampur ...	4 „
Hashtamoli to Sikri ...	13 „
Bidhauri to Chausana... ..	8 „
Shamli-Kairana to Mavi ...	2½ „
Muzaffarnagar-Dharampur Road... ..	31 „

Proposed metalled road.

Shamli to Jhinhana.

N.B.—Total of other roads is 164 miles.

6. Canals.

Name of canal.	Area watered.
Gauges Canal ...	} 212,050 acres.
Anupshahr Branch Canal ...	
Eastern Jumna Canal ...	

7. Railways.

Name.	Length.	Stations.
North-Western Railway.	25 miles	Rohau, Muzaffarnagar, Mansurpur and Kha- tauli.
Shahdara-Saha- ranpur Light Railway.	28 ..	Thana Bhawan, Sir- hind, Shamli and Kandhla.

8. Markets.

Tabail	Basar.	Market days.
Muzaffarnagar ...	Muzaffarnagar	... Saturday.
Ditto ...	Behari ...	... Sunday.
Ditto ...	Baghra ...	... Wednesday.
Ditto ...	Jasoi ...	... Sunday.
Ditto ...	Amirnagar	... Tuesday.
Ditto ...	Charthawal	... Friday.
Ditto ...	Kutesara...	... Thursday.
Ditto ...	Pur Qazi...	... Saturdays and Tuesdays.
Ditto ...	Baschara ...	... Tuesday.
Ditto ...	Chappar ...	... Friday.
Ditto ...	Kamehra Tughalpur	... Wednesday.
Ditto ...	Gordhanpur	... Friday.
Kairana ...	Kairana ...	... Mondays and Thursdays.
Do. ...	Babri ...	... Monday.
Do. ...	Bhaju ...	... Thursday.
Do. ...	Banat ...	... Sunday.
Do. ...	Bhabri ...	... Wednesday.
Do. ...	Jhiujhana	... Saturday.
Do. ...	Garhi Pukhta	... Sunday.
Do. ...	Thana Bhawan	... Friday.
Do. ...	Jalalabad	... Sunday.
Do. ...	Garhi Abdulla Khan	... Tuesday.
Do. ...	Lohari ...	... Wednesday.
Do. ...	Qutabgarh	... Ditto.

Tahsil.	Bazar.	Market days.
Kairana	... Chausana	... Friday.
Budhana	... Budhana .	... Tuesdays and Thursdays.
Do.	... Husainpur	... Monday.
Do.	... Basi ...	... Saturday.
Do.	... Shahpur	... Ditto.
Do.	... Omarpur	... Wednesday.
Do.	... Khara	... Thursday.
Do.	... Gafoorgarh	... Friday.
Do.	... Sisauli	... Sunday.
Do.	... Kandhla	... Saturday.
Do.	... Gangeru	... Sunday.
Jansath	... Jauli	... Friday.
Do.	... Jansath	... Fridays, Sundays and Wednesdays.
Do.	... Kawal	... Saturdays and Tuesdays.
Do.	... Tissang	... Monday.
Do.	... Khatauli	... Friday.
Do.	... Mansurpur	.. Thursdays and Saturdays.
Do.	... Jasaola	... Wednesday.
Do.	... Sarai Basulpur	... Ditto.
Do.	... Phulat	... Monday.
Do.	... Kailauda Kalan	... Thursday.
Do.	... Chandseena	... Monday.
Do.	... Miranpur	... Tuesday.
Do.	... Sambhalhera	... Friday.
Do.	... Bhukarheri	... Monday.
Do.	... Tissa	... Sundays and Wednesdays.
Do.	... Karauli	... Mondays and Thursdays.
Do.	... Bahera Sadat	.. Saturday.
Do.	... Morna	.. Friday.
Do.	... Bhupa	... Saturday.
Do.	... Bejra	... Tuesday.
Do.	... Sikri	... Thursday.

9. *Fairs.*

Place.	Fair.	Date.
Muzaffarnagar	Horse Show ...	March.
Ditto ...	Ghat Mela ...	Chait Badi 2nd to 9th.
Ditto ...	Ramlila ...	Kuar Sudi 6th to 10th.
Ditto ...	Chariyan Mela ...	Bhadon Badi 1st.
Kairana ...	Chharyan Khuaja Chisti.	Jami-us-Sani 13th to 19th.
Do. ...	Chharyan Debi ...	Chait Badi 9th.
Do. ...	Chaudiash ...	Bhadon Sudi 14th.
Ramra ...	Dasehra ...	Jeth Sudi 10th.
Do. ...	Katik Mela ...	Katik Sudi 15th.
Shamli ...	Dasehra ...	Jeth Sudi 10th.
Do. ...	Jogidas ...	Chait Sudi 1st.
Do. ...	Burha Babu ...	Chait Sudi 2nd.
Jhinjhana ...	Moharram ...	Moharram 12th.
Ditto ...	Urs Hazrat Shah	Zil Hijja 23rd.
Banat ...	Urs Imam Sahib...	Moharram 11th.
Thana Bhawan	Goga Pir ...	Bhadon Budi 15th.
Jalalabad ...	Urs Jubba Sharif	Rabiul-Awwal 3rd to 5th.
Bidauli ...	Pir Bahram ...	Thursday in Jeth and Asarh.
Jausath ...	Nisar Ali Mela ...	Thursday 2nd Jeth.
Do. ...	Ghat Mela ...	Chait Budi 2nd.
Do. ...	Ramlila ...	Kuar Sudi 1st.
Do. ...	Shakumbar Debi	Ditto.
Do. ...	Chharyan ...	Bhadon Badi 9th.
Pimora ...	Nisar Ali Mela ...	Thursday 2nd Jeth.
Tissang ...	Chharyan ...	Sawan Badi 9th.
Bhukarheri ...	Do. ...	Sawan Sudi 15th.
Belra ...	Do. ...	Ditto.
Tissa ...	Ghat Mela ...	Chait Sudi 13th.
Shukartar ...	Katik Mela ...	Katik Sudi 4th.
Do. ...	Jeth Mela ...	Jeth Sudi 9th.
Kakrauli ...	Urs ...	Rabiul-Awwal 17th.
Kithaura ...	Chharyan ...	Sawan Sudi 9th.

Place.	Fair.	Date.
Sambhalhera ...	Ghat Mela ...	Chait Badi 2nd.
Miranpur ...	Ramlila ...	Kuar Sudi 1st.
Do. ...	Ganesh Mela ...	Sawan Sudi 15th.
Do. ...	Shakomber Debi...	Kuar Sudi 2nd.
Do. ...	Ram Naumi ...	Chait Sudi 2nd.
Dharampur Ghat	Katik Mela ...	Katik Sudi 11th.
Khatauli ...	Chharyan ...	Bhadon Badi 1st.
Do. ...	Uchao Saraogyan	Chait.
Mubarakpur ...	Chharyan ...	Phagun Badi 1st Tuesday.
Sarwat ...	Mustan Shah ...	Jeth every Thursday.
Charthawal ...	Chharyan ...	Bhadon Badi 9th.
Ditto ...	Ghautoli ...	Chait Badi 2nd.
Ditto ...	Debi ...	Chait Sudi 8th.
Ditto ...	Ramlila ...	Kuar Sudi 6th to 11th.
Dudhi Kalan ...	Goga Pir ...	Bhadon Badi 9th.
Haibutpur ...	Zahir Diwan ...	Jeth 1st Sunday.
Dudhli ..	Ditto ...	Bhadon Badi 9th.
Harsauli ...	Debi ...	Kuar Sudi 14th.
Charauli ..	Burha Babu ...	Chait Sudi 2nd.
Pur Qazi ...	Chharyan ...	Bhadon Sudi 8th.
Dayalpur ...	Jat Shankar Maha- deo.	Phagun Badi 14th.
Raipur Aterva	Piyareji ...	Chait Badi 6th.
Khera Mustan	Urs ...	Zil Hijja 28th.
Sharon ...	Urs Garib Shah...	Shawwal 1st.
Shikarpur ...	Chharyan ..	Bhadon Sudi 14th.

10. Rivers.

Name.	Parganas watered.
The Ganges ...	Gordhanpur, Bhukarheri and Sambhalhera.
Solani ...	Pur. Chhapar, Gordhanpur and Bhukarheri.
Kali ...	Muzaffarnagar, Charthawal, Shikarpur and Khatauli.

MUZAFFARNAGAR DISTRICT.

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Name.	Parganas watered.
Hindan	... Charthawal, Baghra, Shikarpur and Budhana.
Krishni	... Thana Bhawan, Shamli and Kandla.
Kath	... Jhinhana and Kairana.
Kumna	... Bidauli, Kairana, and a small portion of Kandhla.

CHAPTER II.

Description of, and suggestions for, the improvement of various industries in the district.

1. Building material.

(a) *Lime*.—The district imports about 1½ lakh maunds of lime annually from Dehra Dun. There are no power lime factories in the district. This is due to the fact that there are very few kankar quarries. These lie in the tahsils of Kairana and Budhana at a distance from roads and railway stations. The total amount available is only 860,000 cubic feet, which is not sufficient even for Public Works department purposes, and kankar has to be imported from Saharanpur and Meerut.

2. Grains.

A.—Food-grains.

(1) *Raw materials.*

(i) Statement showing acreage and production of principal crops in 1921-22 :—

Name.	Area in acres.		Total produce in maunds.
	Irrigated.	Dry.	
Wheat	157,816	82,041	1,387,000
Wheat with gram	3,806	21,726	78,500
Wheat with barley	488	7,842	91,800
Barley	4,578	20,769	111,600
Gram	2,161	182,168	1,348,000
Pea	6,197	7,133	48,500
Masur	1,019	5,868	29,000
Potato	413	8	62,750
Juar	17	15,288	122,150
Bajra	238	27,500	188,900
Juwar, bajra and arhar (mixed)	1	641	2,706
Early rice	14,539	2,969	184,100
Late rice	5,468	2,404	99,500
Maise	6,845	88,097	415,000
Urd, moong, moth	1,924	37,198	166,100

(ii) *Exports and imports.*—Exact figures from North-Western Railway were not available. The following is a rough estimate :—

Exports and imports, 1921-22.

Name.	Quantity in maunds.	Value in rupees.	Chief place of consignment or origin.
<i>Exports.</i>			
Wheat	1,050,000	66,90,000	To Howrah, Bombay, Karachi, Delhi, Lahore, Hyderabad, Sindh, Lyallpur, Aurangabad.
Barley	5,000	80,800	Ditto.
Juar	25,000	1,12,000	To Delhi and Punjab.
Pea	5,000	...	• Ditto.
Bajra	27,000	1,60,000	Ditto.
Gram	80,000	...	To Meerut.
Potato	25,000	...	To Delhi.
<i>Imports.</i>			
Gram	225,000	...	From Lakkhi Sarai, Baxaul (Bengal).
Rice	100,000	7,50,000	From Howrah.
Kurrie	25,000	...	From Ramnagar.

(2) *Industries.*

Wheat flour grinding.—There are three water mills on the canals at (1) Nirgajni and (2) Chitaura on the Ganges Canal, and (3) Yarpur on the Jumna Canal. There are six pairs of stones worked with country wheels in each of the mills. The mills are leased by auction to contractors who pay rents according to the consumption of water. In addition, there are six small oil-engines at Musaffarnagar and Shamli. Fine wheat flour is imported from Umballa and Delhi.

B.—Non-food grains.

Raw materials.—Statement of acreage and production of non-food grains and pulses in 1921-22 :—

Name.	Area in acres.		Total produce in maunds.
	Irrigated.	Dry.	
Cotton	3,529	19,060	125,000 seed cotton or 41,500 cotton.
Juar chari	1,447	75,436	617,400
Sugarcane	86,964	6,151	5,525,300 <i>gur</i> .
Linsced	1	10	45
Till (sesamum)	1	56	231
Rape and mustard	100	320	1,930
Oats	3,095	221	38,500
Tobacco	208	2	2,366

Exports and imports of non-food grains, 1921-22.

Name.	Quantity in maunds.	Chief places of consignment or origin.
<i>Exports.</i>		
Cotton	90,000 seed cotton	To Delhi, Saharanpur.
Jaggery and molasses	8 lakhs mds.	To Panjab stations.
<i>Imports.</i>		
Cotton seed	50,000	From Khangaon, Saharanpur.
Oil cake	50,000	From Cawnpore.
Ginned cotton	500	From Saharanpur.

Muzaffarnagar is renowned for the quality of its jaggery and molasses. Sugar refining is carried on throughout the district. Nahan State presses are mostly in use, as they are obtained on hire from the Nahan State agencies in the district. As a special committee has enquired into the sugar industry, further investigations were not made.

3. Hardware.

Industries under this head give employment to about 2,500 persons. The chief works are the manufacture of (1) iron tools and vessels, (2) copper, brass and bell-metal vessels,

(a) *Manufacture of brass, copper and bell-metal vessels.*—

The industry gives employment to about 180 persons. The chief centres are Shamli and Miranpur. Domestic vessels, such as trays, cups, kettles and huqqas, are manufactured by casting. "Fursbi" huqqas of brass and prince's metal manufactured at Miranpur are very beautiful and better than those of Moradabad. No tinning is done as at Moradabad, but the polish is so good that it lasts for ever. The white metal huqqa weighing two seers costs Ra. 6 and is sold for Ra. 7. The process of manufacture is the same as is described by Mr. Dampier in his monograph on Brass and Copper. The following is an estimate for the manufacture of a lota 1 seer 6 chataks in weight and possessing capacity of about 1½ seers of water.—

	Rs.	s.	p.
Price of raw material	0	12 0
Moulding and furnace charges	0	4 0
Turning and filing	0	4 0
Fuel and earth	0	3 0
Chemicals	0	1 0
Establishment and implements	0	2 0
		<hr/>	
Total cost	1	10 0
Selling price	2	0 0
		<hr/>	
Hence profits amount to		0	6 0
		<hr/>	

About 1,000 maunds of raw material is imported from Delhi annually. The turnout is about 800 maunds, out of which about 400 maunds is exported.

Suggestions.—(1) Better tools as are used at Moradabad and hand presses should be introduced. (2) Sheet brass vessels are becoming more popular. Their manufacture should be started. (3) Some sort of advertisement by way of sending samples should be resorted to. (4) Co-operative societies should be organised to find money at cheaper rates of interest. The present rate is exorbitant.

(b) *Cutlery.*—At Kairana penknives, razors and some sarautas (nut-crackers) are manufactured by about 12 men. All

the work is done by the manufacturer who makes blades and handles and fits them, and also sharpens and polishes the articles himself.

Sandalwood is mostly used for making handles; refused railway iron and used-up files for making blades. The articles are either made to order from or sold to local dealers. Some are exported to Hathras where they are given better polish and varnish and sold as Hathras cutlery. Very crude and rough tools and implements are used. The knives seem to be carelessly shaped and clumsily made. The prices are as follows :—

	Rs.	a.	p.
(1) 3 inch blade with sandalwood	...	0	6 0
(2) Ditto shisham wood	...	0	5 0
(3) Sporting knife	...	0	14 0
(4) 5 inch blade with sandal wood	..	0	10 0
(5) Ditto shisham wood	...	0	8 0
(6) Ordinary razor	...	0	7 0
(7) Nut-cracker (sarauta)	...	0	10 0

The dealer's profit is usually 4 annas in a rupee. The manufacturer earns from 10 annas to Re. 1 a day.

Defects in the workmanship and suggestions for improvement.—(1) The blade and particularly the lower end is very carelessly made, so that when the knife is half opened, the blade and the handle are not at right angles to each other. The blade should be carefully made so that the edge against the spring be at right angles to the blunt edge of the blade, and when half open the blade and the handle be mutually perpendicular. (2) The blade is very clumsy and not polished. Some hand machine for polishing should be adopted on emery wheels attached to an ordinary oil-engine, such as already exist in the district for wheat grinding. This will give a better polish and finish to the blade. (3) The handles are never polished and varnished. This should be done. (4) There are three branches of this work :—(i) carpentry for making handles ; (ii) smithy for making blades ; and (iii) saiqa or polishing. One artisan should be permitted to specialise in a particular branch, and a factory started with the co-operation of the three. This will improve

production as well as finish. (5) Up to the time that suggestion no. 2 cannot be given effect to, the articles may be sent to Meerut for final polishing, varnishing and finishing.

(c) *Sword-sticks, guns and knives.*—Two blacksmiths of Batrara manufacture sword-sticks and sporting knives and undertake the repair of guns. They have obtained a licence to do this work. The Collector, P. W. Marsh, Esq., I.C.S., showed me a locally made sword-stick which was very nice. This shows that decent articles can be produced if there is demand and patronage.

(d) *Iron sugar refinery pans and kolhus.*—Due to the widespread sugar and *gur* refining industry in the district a large number of persons are engaged in repairing (in some cases in manufacturing) pans; kolhus are imported from Nahan State and damaged or out of order are repaired at several places such as Khatauli and Muzaffarnagar.

An iron foundry on a small scale for making kolhus and agricultural implements will be a great asset to the industry.

Besides this, there is a large number of village smiths, most of whom are carpenters. The number of actual workers in iron was 2,706 males and 78 females in the census of 1911.

4. Haberdashery.

Straw caps.—A small industry has been recently started at Kairana where caps of Indian pattern are made of straw.

Process.—Women weave wheat stalks by hand into strips during leisure hours. A strip is usually made of five or seven stalks plain or dyed in aniline colours. It is then sold to the manufacturer of caps at the rate of 12 annas for 100 yards. The manufacturer then stitches together the strips with needle and thread into plain and beautifully coloured caps, which are light, cheap and tolerably durable. Some are exported to the Punjab where such caps are favoured by the trading class of Punjabi Musalmans. There is at present only one skilled manufacturer who turns out about two caps a day and earns about 10 annas. About

25 yards of strip is required for an ordinary cap which sells for 8 annas. The following prices are charged :—

	Rs.	a.	p.
For a dyed cap	0	8	0
For a plain one	0	6	0
For a Turkish cap	0	12	0
For a small "pitari" (box) ..	0	5	0

Suggestions—The industry being a new one and in its infancy requires special attention, encouragement and patronage. Other articles such as suit cases, attaché cases, bags, trunks, baskets, hats, "pitaris," etc., should be introduced. It is hoped that they will find a ready sale. The industry should be organized on a factory basis by some capitalist who can invest money and keep himself in touch with the fashions of the day and the tastes of the people. Advertisement should be widely resorted to.

5. Leather.

(a) *Tanning*.—There is no modern tannery in the district. About 1,500 chamars (men and women) are engaged in the work of tanning, curing, drassing and dyeing of country leather for country shoes, irrigation buckets or mots, and similar articles. The country tanuers are distributed all over the district, but Budhana, Lisadh, Gafoorgarh and Shoron are the chief seats. The number of hides and skins that are available annually for tanning is about 8,000 and 4,000 respectively. The following is a rough estimate of expenditure incurred in tanning one hide :—

	Rs.	a.	p.
Price of hide	6	0	0
Price of bark 5½ seers	0	1	6
Price of chemicals (salt and lime)	0	2	6
Labour engaged	0	4	0
Cost price of one (half-tanned) hide	6	8	0
Selling price	10	0	0
Thus the tanner earns by tanning one hide	3	8	0

Suggestions.—(1) It appears that the chamars will be able to effect material improvement in their time-honoured methods—

of work, if only they are offered an opportunity to be conversant with modern methods of work and processes of tanning by working for some time any modern tannery. (2) Co-operation amongst the tanners will do a great deal in establishing the cottage industry on regular lines by finding cheap credit.

(b) *Manufacture of shoes, saddlery, harness and other articles of leather.*—About 1,800 persons, males and females, are engaged in the work all over the district. Country shoes for local consumption are made by chamars and moohis who number about 300 families. Locally tanned hides and skins are used. One family makes about three pairs of shoes in two days. Daily earnings are from 10 annas to Re. 1. Thus the number of pairs made annually for 250 working days is about $\frac{300 \times 250 \times 3}{2} = 112,500$. The price of a country shoe on wholesale rates is about 14 annas on an average. Thus the outturn in value is about Rs. 98,000. The price varies from 6 annas to Rs. 1-8 according to quality. Better Indian shoes and high class boots and shoes are imported from Agra, Cawnpore and Delhi and a small amount from Meerut; slippers are imported from Calcutta. The total import of slippers and shoes is estimated to be about Rs. 55,000 in value.

Indian saddlery and harness (charjamas) are made at Kandhla and Lohari to a small extent by about 15 men. The estimated annual outturn is about 500 charjamas. The articles lack in finish. There is no proper factory or firm and no advertisement is resorted to, but the industry is promising.

Suggestions.—(1) Labour saving mechanism, though on a small scale, should be introduced whereby a proportionately larger outturn and consequently greater profits will be obtained. (2) Short courses of training at the Government Leather Working School at Cawnpore or at Meerut or any similar institution will serve to improve the handicraft of the workmen and show new ways whereby newer styles of goods, e.g. suit-cases, bags, trunks, boxes, cartridge boxes, gun cases, book covers and binders, cigar and cigarette cases, etc., could be introduced. (3) Small capitalists should take up the manufacture of the above-mentioned articles on factory system.

(4) A central firm as a co-operative store at Kandhia may take up the work of a cheap credit society, standardization of goods, the purchase and sale of raw materials, and the finished products.

6. Miscellaneous.

(a) *Papiér mache*.—A small amount of Papiér mache work was done at Jansath and Miranpur, but the industry has practically died for want of demand.

Suggestions.—As skilled labour is available, small and cheap articles, such as toys, cigarette boxes and other fancy articles, should be manufactured and their sale pushed by wide advertisement.

(b) *Cloth curtains studded with mirror pieces*.—A few persons at Sisauli and one at Kairana can make cloth curtains studded with pieces of glass mirror. No workman is particularly engaged in the work.

Cloth is purchased from the bazar either ready dyed or is dyed yellow, green or blue. Pieces of blown mirror glass are imported from Paniput at 10 annas a seer. The mirror pieces are cut with ordinary scissors or knife and formed into floral and geometrical figures. Paste is applied to the back of these pieces and they are pasted on the cloth according to the designs wanted.

The price of a curtain varies with its workmanship and the quality of the cloth used, e. g., Rs. 8 for a pair 3 yards \times 1 yard. There is very little demand at present, but it is understood that the article is much liked in England and other European countries.

Suggestions.—(1) The mirror pieces are irregularly cut. More skill and the use of diamond pen are needed to make cuttings regular. (2) It is seen that the glass pieces drop off from the cloth by rough handling. If possible, they should be more firmly pasted, or the cloth be sewn over the edges as is done by village women in their gowns and headwear. (3) Training is needed in designing. Extensive advertisement, chiefly in the English markets, should be resorted to. The industry deserves special attention and organization. It can expand if properly organized.

7. Oils.

Crushing of oil-seeds.—There are about 3,800 telis (males and females) comprising about 900 families. The district does not produce enough oil-seeds for its telis who have consequently taken to other pursuits like palladari (porters' work), fruit selling, agriculture, etc. The total production of the district is only 45 maunds of linseed, 230 maunds of sesamum, 1,930 maunds of rape and mustard, i. e., a total of 2,206 maunds, which is hardly sufficient for 900 kolhus for eight or nine days at 12 seers per kolhu per day. Hence only a small number of telis do the work of crushing linseed.

8. Pottery.

(a) *Domestic pottery.*—Local "kumhars" all over the district make domestic pottery. Their number is about 3,500 males and 1,000 females. The work is stopped during rains. All the vessels are made for local consumption.

(b) *Art pottery.*—Glazed pottery is made at Miranpur (Jansath). There are five families of potters who make "chilums," handis and similar other articles. They are pated with dark red glaze. The articles are shaped with hand on the wheel inferior to that of Meerut, but the clay seems to be more tough and hard. There is no export out of the district. A chilum is sold from three to five pice each; a handi for two to three annas.

Miranpur is an out of the way place far from a railway station and there is no hope of any improvement in the industry.

A few glazed articles such as "pikdars," lotas, milk pots and toys are made at thana Bhawan (Kairana). The glaze is usually black. The articles are made on the wheel. They are light and beautiful. They are taken to Garhmukhteswar (Meerut) and other fairs for sale and are from there exported to the Meerut and Saharanpur districts.

9. Textiles.

A.—Cotton.

(i) *Raw materials.*—The area under cotton in 1921-22 was 32,589 acres and the produce amounted to about 125,000 maunds

seed cotton. The produce is exported mostly to Delhi, Meerut and the Punjab. There is no gin or press in the district.

(ii) *Ginning*.—About 1,400 men and women are engaged in ginning cotton with hand charkhis for about 100 days during the season. At an average of 10 seers kapas per head per day the amount of seed cotton ginned by hand comes to be about $\frac{1400 \times 10 \times 100}{40}$ or 35,000 maunds, giving about 11,700 maunds of ginned cotton worth about Rs. 3,94,000 at 19 chataks to a rupee. To this should be added 500 maunds of imported cotton. Thus the total quantity of ginned cotton comes to 12,200 maunds. Out of this about 9,900 maunds are consumed in quilts, etc., and 2,300 maunds are spinned in the district.

The ginning charges are the price of cotton seed which is retained by the ginner. One maund of kapas yields about 26 seers of seed and the price of seed is 71 seers per rupee, the price of 26 seers seed is about Rs. 3-7, which are consequently the ginning charges per maund. The seed is sold locally as cattle food.

(iii) *Spinning*.—There are about 3,000 spinners, both males and females. At an average of two chataks per head per day the total quantity of yarn spun by hand in 250 days comes to be $\frac{2 \times 3000 \times 250}{16 \times 40}$ or 2,300 maunds and Rs. 1,47,000 in value at 10 chataks to a rupee. Spinning is mostly practised by village women who sell the yarn usually in the village markets close by. Hand spun yarn corresponds to 7's, 8's and 10's; sometimes as fine as 12's the price varies from 8 to 12 chataks a rupee according to the fineness.

(iv) *Garha weaving*.—Swadeshi cloth (garha and dusuti) weaving is carried on all over the district by weavers who number about 11,000 males and females. The recent swadeshi movement has given an impetus to the weaving industry. The weavers are everywhere wholly engaged in the work and have given up other professions which they used to carry. On an average a weaver earns about Re. 1-4 a day when assisted by his family. Fly-shuttle looms are mostly in use. Much has been done by the Government Blanket Weaving School in this line. Out of the 1½

looms in the school 13 are worked for cotton, 45 looms are worked on factory lines and produce 45 pieces of 12 yards each daily.

Outturn.—Supposing a family of weavers to consist of four members, there are about 3,000 families in the district. One family weaves on an average one piece of "garha" cloth 12 yards in length and about $1\frac{1}{2}$ to $1\frac{1}{4}$ seers in weight. Thus the daily outturn comes out to be about 3,000 pieces, 36,000 yards in length and weighing about 130 maunds. Taking 250 working days in a year, the annual outturn comes out to be about 750,000 pieces, 9,000,000 yards in length and weighing about 30,000 maunds.

Shamli and Muzaffarnagar are the chief places of industries. Cotton yarn is imported chiefly from Delhi. The import of mill yarn mostly of 12 $\frac{1}{2}$, 14 $\frac{1}{2}$ and 27 counts is about 25,000 maunds annually, that of hand spun yarns is about 3,000 maunds.

The weaving charges depend on the width of the cloth and the number of picks per inch, e.g., 4 annas a yard for 55 inches width, 2 annas to 2 annas 6 pies a yard for 36 inches width, 1 anna a yard for 27 inches wide plain cloth, 1 anna 6 pies for 27 inches wide twill garha. The number of picks is usually 30 per inch.

Marketing system.—The weavers sell their goods either by going to the neighbouring villages on market days or by door to door selling it in the city. When they are unable to sell by these means, they go to dealers and have to be content with whatever prices is offered to them. Thus much of their valuable time which would have otherwise been utilised in weaving is wasted in bazars and door-to-door selling.

Suggestions.—(1) Garha is usually woven in $\frac{1}{2}$ yard width. Greater widths should be woven. (2) It will reduce cost to a certain extent if instead of double yarn, single yarn were used after proper sizing. (3) The use of fly-shuttle loom should be further extended. (4) Co-operative organization for the purchase of yarn and sale of finished product will save the weavers' precious time which is wasted in marketing.

(v) *Carpet weaving.*—A small amount of durrie weaving is carried on in Muzaffarnagar, but the industry calls for no special attention. They are made to order for local consumption only.

B.—Wool.

(i) *Raw materials*.—The number of sheep in the district was 54,386 in 1920 cattle census. Three clippings are done in a year, i.e. at the end of March, end of June and end of September. March wool is said to be the best, as it is free from dead hairs. The total amount of raw wool obtained from all the clippings is about 6 chataks per head. Thus the wool available annually in the district is about 510 maunds or only about one-fifth of the district consumption which is about 2,500 maunds. The rest is imported chiefly from the Punjab, some from Rajputana and a little from the hills. The following are the prices of different kinds of wool :—

Hill wool of the best quality	Six chataks for a rupee.
Black wool	Rs. 25 to Rs. 26 a maund.
White wool	" 30 " " 40 ditto.
Camel brown wool	" 40 " " 45 ditto.

Dealers, such as Rustomji & Co., do not directly import wool from the abovementioned provinces to the district, but get it spun in other places such as Aligarh, and the yarn is brought to Muzaffarnagar. There is no dealer in wool in the district, hence great difficulty is experienced by kamalyas in the purchase of wool. As at Meerut, they go in groups to buy the wool from Gurgaon and Rajputana and have to undergo unnecessary expenditure and trouble. Similar trouble is felt in the purchase of yarn. The yarn dealers are themselves owners of blanket factories and sell only as much as they can spare, and that too on a somewhat higher rate.

Suggestions.—(1) There should be a store for the purchase and sale of wool and yarn. (2) The kamalyas instead of going in groups should send a reliable representative to purchase the wool for them.

(ii) *Blanket weaving*.—There are about 300 kamalyas in the district, mostly residing at Muzaffarnagar, Miranpur and Gangern. Miranpur is renowned in the district for the quality of its blankets. Muzaffarnagar is the chief centre of the hand-woven blankets in the United Provinces and commands a large amount of exports to different parts of India. Cheap blankets

are mostly exported to Bengal for the use of labourers in tea gardens. When the local produce is not sufficient to meet the demand, a large number of blankets is imported from Lawar and Nirpura of Meerut district. The amount of export trade was considerable during the War, when 10,000 blankets were manufactured daily in the district or obtained from Meerut for export, but the demand has fallen considerably after the War and export this year is not estimated to be more than 30,000 blankets.

Provincial manufactures is the biggest concern in the district, employing the largest number of persons; but it may have to be closed as the business is going down. The number of persons employed at present is 18 working with 16 looms. Another factory named Jatya-Vaster Karyala is working with 12 looms. The kamalyas mostly weave the blankets to order or sell to dealers from whom they obtain advances on the prevailing advance system. Process is given in Mr. Pim's monograph on woollen fabrics.

Ready spun yarn is purchased from the dealers at rates varying from 56 to 60 rupees per maund for black, 80 to 90 rupees for white, and 90 to 100 rupees for dyed yarn. Hand spun yarn is usually of 7 or 8 counts. If wool is purchased, it is graded at annas 3 to annas 4 a seer and spun at annas 4 to annas 5 a seer. Rice and wheat flour is used for sizing. Soda, "ritha", soap, linseed oil or mahua oil is used in milling. Strips 21 inches to 30 inches wide are woven on an ordinary fly-shuttle loom. Usually four strips are stitched together to produce a blanket two yards wide. Sometimes two pattis of $4\frac{1}{2}$ yards in length and 40 inches in breadth are stitched together. The number of picks is 8 or 9 per inch. The blanket is then subjected to milling process by being thoroughly kneaded under feet. Oil grib is added to increase the weight and sulphur is used to remove the offensive smell. Milling charges are 6 annas per blanket. Weaving charges were annas 8 during War and are annas 12 nowadays. When milled, the number of picks are increased to 10 or 11 per inch.

All sorts of blankets, black, white brown, checks, with brown wool borders, plain and dyed in fast acid dyes, are manufactured.

Dyed blankets of mill pattern are manufactured in the Government Blanket Weaving School, Provincial Manufactures and Jatya-Vastar Karyala only.

Cost of making an ordinary blanket.—

	Rs.	s.	p.
(1) Price of 2½ seers wool at Rs. 40 a maund	2	8	0
Carding charges at annas 4 a seer ...	0	10	0
Spinning charges at annas 4 a seer ...	0	11	6
Sizing charges ...	0	4	0
Weaving charges ...	0	12	0
Milling charges ...	0	6	0
Establishment and other charges ...	0	6	0
	<hr/>		
Total cost	5	9	6

This will be sold for Rs. 6-8, thus giving a profit of Re. 0-14-6.

	Rs.	s.	p.
(2) Price of two seers yarn ...	3	0	0
Milling charges ...	0	4	0
Sizing charges ...	0	4	0
Weaving ...	0	12	0
Miscellaneous ...	0	6	0
	<hr/>		
Total	4	10	0
Selling price	5	4	0
	<hr/>		
Profits	0	10	0

Outturn.—A kamalya family weaves one coarse blanket in one day, a finer one in two days and earns about Re. 1-8 daily. The number of kamalyas is about 300 males and females comprising about 100 families. Thus the outturn comes to 100 blankets a day. Taking the number of working days to be 250 a year, the number of blankets produced comes out to be 25,000, worth about Rs. 1,50,000 at an average of Rs. 6 per blanket.

A carder can card 5 to 10 seers wool daily, earning Re. 1 to Rs. 2; a spinner can spin $1\frac{1}{2}$ to 2 seers wool, earning 7 to 10 annas a day.

Exports.—The number of blankets exported in 1921-22 was about 40,000; out of this 25,000 were produced locally and 15,000 were imported from the district of Meerut, chiefly from Lawar and Nirpura. The stipulated amount of export this year is from 25,000 to 30,000.

Marketing.—The provincial manufactures broadly advertise their produce both in papers and by sending agents to secure orders. The kamalyas do not resort to any sort of advertisement, but sell their manufacture to local dealers or weave blankets to order.

Causes of the decline of the industry and suggestions for improvement.—(1) The number of woollen mills in the country is daily increasing. Cheap blankets with fast colours are produced by them. The hand spun and woven blankets cannot compete with the mill product which is comparatively cheaper and has a good finish, though it is admitted that the country blankets are warmer and more durable. Cheap blankets can be produced, but the question is of giving them a better finish. Even if a finishing machine be introduced the strip blankets will not acquire the desired finish as the stitched portions give way when subjected to the finishing process. The difficulty will be solved if blankets are woven of the required width and then finished. It is difficult to weave a wide blanket with hand spun yarn on a fly-shuttle loom, hence mill yarn will have to be used. Mill yarn is at present very dear at Muzaffarnagar, and it is not paying to weave a blanket with it in competition with the mills. Thus spinning mill is urgently required at Muzaffarnagar, which could put yarn in the local market at rates favourable for the above competition. (2) There is some defect in the milling process as the country blankets emit a bad smell when they get wet. This should be removed. (3) The kamalyas do not fully know the process of dyeing wool and the use of acid dyes. This should be taught to them. An instructor from the local weaving school

should be deputed for the purpose. (4) A co-operative store for the purchase and sale of wool and yarn as well as for that of acid dyes should be opened at Muzaffarnagar as the kamalyas experience much difficulty in getting wool or yarn and cannot differentiate between the fast acid colours and the fleeting ones. (5) The end threads of the country blankets are short. They should be a little longer and twisted as those of mill blankets. (6) Only a small amount of warm clothing and 'lohis' is woven at present. This should be enlarged and encouraged. (7) Attempts should be made to weave fine 'lohis' and shawls as are imported from the hills. (8) Credit societies should be organized to advance petty sums to kamalyas at cheap rates of interest as the dealers and the money-lenders charge a very high rate. The poor persons being burdened with heavy debts cannot purchase a sufficient stock of different varieties of wool at a favourable time.

(3) *Carpets*.—A small amount of pile carpets and 'asans' is woven at Rustomji's Provincial Manufactures and Keshoji's factory. They are also woven at the Government Blanket Weaving School. The following is an estimate of the cost of manufacture at the school:—

	Rs.	s.	p.
Dyed yarn, 7 seers, at Rs. 90 a maund	..	15	12 0
Weaving charges (10 days' labour), etc.	...	10	0 0
Total cost	...	25	12 0

The finished carpet will be 5½ seers in weight and be sold at Rs. 5 a seer. The selling price will be Rs. 27-8. Thus Rs. 1-12 will be the profit.

Unless the industry expands by proper organization and broad advertisement, there is little hope of its success in competition with other centres of carpet making. The prices are very high and designs open to improvement.

C.—Calico printing.

According to the census of 1911, the number of actual workers in dyeing, printing and bleaching of cotton cloth was 1,252 males and 643 females. Of course, the majority belongs

to the village chhipis who print very ordinary coarse 'lihafs' and 'toshaks' for villagers during the season and are partial agriculturists in the rest of the year. Skilled calico printers who print 'lihafs' (quilt covers), 'toshaks' (quilt beds), 'palang-posh' (bed sheets), 'duster-khwans' (dinner sheets) and 'jamawar' (coating cloth) number about 30 at Kairana and Muzaffarnagar.

Process and blocks.—The process is the same as is described in Mr. Silberrad's monograph. Shisham blocks for ordinary prints are locally made by the carpenters at charges varying from Rs. 5 to Rs. 15 each according to the design and fineness. Blocks for fine prints and borders are imported from Jahangirabad, Lucknow and Kanauj, and cost from Rs. 10 to Rs. 30 each according to fineness. The local carpenters either get the designs from the chhipis or invent themselves.

Printing charges and colours.—Cloth is mostly printed to order and the following rates are charged:—'Razai' Rs. 1-8, bedsheet Rs. 1-8 to Rs. 2, 'toshak' Re. 1 to Rs. 1-8, 'lihaf' Re. 1-4-0, 'jamawar' Re. 0-3-0 to Re. 0-4-0 a yard.

Course prints are in yellow, black and red colours, while fine prints present the same colours and characteristics as at Lucknow and Farrukhabad.

Outturn and wages.—One skilled chhipi can print 3 'razais' in 2 days and earn about Re. 1-4-0 a day. Village chhipis earn only about Re. 0-6-0 a day if they do the work on their own account.

The total annual outturn is estimated to be about 25,000 pieces as the chhipis are not solely engaged with the work throughout the year.

Defects in printing.—(1) The chhipis do not fully know the use of synthetic dyes and cannot properly make use of vat colours and mordants. (2) Colours overlap. More skill and training is needed in printing. (3) Washing of prints takes a very long time.

Suggestions.—(1) A peripatetic school of dyeing and printing with an instructor in designing should be deputed to train the chhipis of Kairana and Muzaffarnagar the art of printing as

at Farrukhabad. (2) Washing machinery should be introduced. (3) Printing rollers which are worked by hand cost only about Rs. 3,000 can be easily introduced for chhintz and jama-war printing. This will increase the outturn. (4) The chhipis at present do not favour any sort of a co-operative society. Some other sort of a cheap credit society to financially assist the chhipis for purchasing raw materials and machinery should be opened. An enterprising and skilled chhipi, Muhammad Yusuf of Kairana, is ready to introduce and work the machinery if helped financially.

D.—Fibres.

(i) *Raw materials.*

Name of fibre.	Area under cultivation.	Estimated amount of fibre.	Remarks.
	Acres.	Mds.	
Sann hemp ..	518	2,590	
Patsan and others..	5	20	
Moonj beend ..	..	4,900	Ganges and Jumna Khadir.
Kans pools ..	..	210,000 in no.	Mostly Ganges Khadir and canal banks.
Aloe ..	..	200	Village roadsides.
Khas ..	..	250	Jumna Khadir.
Poolas (reeds) ..	..	5½ lakh in no.	
Sink poolas (bundles)	..	3 lakh ..	Used for brooms.

Moonj, beend, poola are found scattered all over the district. Beend, poola and kans are used for thatching purposes only.

(ii) *Moonj bans.*—Coarse moonj bans (bed strings) are twisted everywhere in the district for local use, but fine bans of Kairana command a good sale in the district. Small capitalists should try to organize the industry of ban twisting. If hand machines as are used in Hasanpur (Moradabad) are introduced for twisting, production will increase. Moonj matting is made in jail only.

(iii) *Cultivation of aloe.*—It appears that the soil is exceptionally suitable for aloe plantations (agave). It is to be seen whether its plantation in the khadir 'usar' tracts where no crop is grown will succeed or not. If it succeeds, it will be a

profitable business for the zamindars. Small factories can be organized for making ropes and matting out of aloe fibres, which will find a good sale. Aloe is at present seen only on the sides of some village roads or as fences in fruit gardens. The Canal department should make an attempt to plant it along the canal putties.

4. *Sann hemp*.—Sann hemp is mostly used for making ropes. The outturn of sann hemp in 1922 was 2,590 maunds of fibre. Its plantation can be increased if there be a demand.

10. Wood work.

1. *Carpentry*.—The number of carpenters in the district is about 4,000, out of whom 18 are engaged in the work of making carts, wheels, dolas and similar other means of transport. Twenty-five persons are engaged in furniture making and repairing work. The rest are the village carpenters who are partly agriculturists and help in repairing agricultural implements.

Four carpenters at Kairana make blocks for calico printers. The outturn depends on the orders from ohhipis. They are not solely engaged in the work, but as a subsidiary work along with the building materials. Designs are given by the ohhipies who get them from their Jahangirabad and Lucknow friends.

2. *Turnery*.—A little amount of lacquered work is done at Jalalabad and Thana Bhawan. Plain and lacquered bed posts are turned and sold locally at Ra. 2 to Ra. 4 a set of four posts. The following is an estimate of turning a set of four lacquered posts:—

	Ra.	a.	p.
Raw material (shisham wood) ...	0	10	0
Gharai charges	0	6	0
Head turner's wages (half day) ...	0	10	0
Assistant turner's wages (half day) ...	0	4	0
Lac colour	0	4	0
Establishment and other minor charges ...	0	1	0
Total cost ...	<hr/>	2	3 0 <hr/>

	Ba. s. p.
The selling price will be ...	... 2 8 0
	<hr/>
Profits ...	... 0 5 0
	<hr/>

The turner is himself the dealer; usually he makes the articles to order.

CHAPTER III.

INDUSTRIAL POSSIBILITIES OF THE DISTRICT.

1. *Finishing machine for blankets.*—The blanket industry of Muzaffarnagar is an established one, but it is losing ground in competition with the daily increasing mill products which are cheaper and far more superior in finish. The export trade was considerable during the War. The demand of export has now fallen from 1 lakh blankets to only 30,000 a year. The introduction of a finishing machine is a necessity to impart a superior appearance to the country blankets.

Market.—The district produces about 25,000 blankets and imports from Meerut about 15,000 more. Thus a finishing factory can easily get 40,000 blankets at Muzaffarnagar and more from the neighbouring districts.

Capital.—A capital of about 60,000 rupees is required for the whole machinery inclusive of buildings. The following is a rough estimate :—

	Rs.
1. Engine and boiler	13,000
2. Accessories	5,000
3. Milling and scouring machinery	5,000
4. Dye vat, raising and wringers	6,000
5. Drying frames	500
6. Pipe fittings	1,000
7. Buildings	25,000
8. Other petty expenses	500
Total	56,500

Making an allowance for the fluctuations in the foreign exchange 60,000 rupees will suffice for the whole plant.

2. *Spinning mill.*—Woollen yarn imported from the Cawnpore and other woollen mills proves to be very dear for blanket weaving at Muzaffarnagar. Moreover, the woollen mills cannot spare much yarn for sale. If the quality and finish of the blankets is to improve more even and stronger yarn is required than what can be produced by hand spinning. If a spinning mill be started at Muzaffarnagar to meet the demand of the local hand weavers, it is hoped that it will be able to supply cheaper yarn than those of the existing woollen mills.

Market.—The district requires about 2,500 maunds of yarn for 30,000 blankets. Besides this Meerut requires about 2,000 maunds for its 25,000 blankets. Thus there is a local demand for about 4,500 maunds of yarn.

Capital.—About 1 lakh rupees will be required for a spinning mill. The following is an estimate:—

	Rs.
1. Boiler and engine about	20,000
2. Accessories	4,000
3. Pipes and other fittings	1,500
4. Buildings	50,000
Total	75,000
5. Raw materials, etc.	25,000
GRAND TOTAL	1,00,000

Lala Anand Swarup, Rais of Muzaffarnagar, is thinking of starting a spinning mill and combining a blanket factory with it with a capital of 3 lakhs of rupees.

3. *Cloth curtain industry and its allied glass factory.*—As laid down in Chapter II, a few persons at Sisauli and Kairana can make door curtains studded with mirror pieces. Such curtains are much favoured in England, but at present there is neither a particular place of production or a shop, nor a particular market. The industry being a promising one should be taken up by small capitalists and properly organized. Skilled persons from Sisauli and Kairana should be employed and a factory opened. A small factory on the lines of Paniput glass factories should be opened for the purpose of manufacturing

blown glass mirror pieces required for curtains. Expert labour for glass factory can be imported from Paniput. Raw materials, reh and sand, for the same are sufficient in the neighbourhood of Kairana. The capital required for the purpose will be about Rs. 10,000, i.e., Rs. 5,000 for the curtain manufacture and Rs. 5,000 for the glass factory. The business can be started with even a lesser capital. It is to be seen what amount of export business can be established with England.

4. *Manufacture of straw articles.*—Another factory which can be started and organized by a small capitalist is the manufacture of straw hats, caps, suit cases, bags and sundry other articles. Wheat straw can be obtained in abundance. Skilled labour is available at Kairana. A properly organized factory will surely be a profitable concern. The articles being cheap and light will find a good market. The factory will prosper in the hands of a person who can study modern taste and fashions. Broad advertisement of the articles will popularise the manufacture. Secretary, Municipal Board, Kairana, is thinking of starting one. Some articles which were made on my suggestion were admired all round. More encouragement and help are necessary.

5. *Kolhu (sugarcane press).*—Meerut is a great exporting mart for jaggery and molasses. The district produced 5,525,300 maunds *gur* in 1921-22. Sugar refining and *gur* making are carried on all over the district. Naban State has established its agencies at many places for giving the kolhus on hire. Usually Rs. 32 are charged for one kolhu for the season. There is scope for a small iron foundry for the manufacture of iron cane sugar presses and pans. Katauli or Muzaffarnagar would be the best place of location for the foundry as both are railway stations and also marts for jaggery.

6. *Cutlery.*—A small amount of knives and razors is manufactured at Kairana. There is scope of a properly organized small factory at Kairana. The capital required would be about Rs. 8,000, i.e., Rs. 5,000 for an oil-engine and machinery and Rs. 3,000 for emery wheels and raw materials. No special

building will be needed. Wheat grinding can be taken up as a subsidiary work.

7. *Rope making.*—The district produces about 4,000 maunds of moonj and 2,500 maunds of sann is available. Ropes are made out of these, but crude appliances are used at present. If machines were introduced for pounding and twisting, production would increase.

Sann is sown on very poor soil. No cultivator will grow it on good soil. Muzaffarnagar is a rich district.

8. *Plantation of aloe (agave).*—The soil of Muzaffarnagar seems to be favourable for the cultivation of agave. The matter requires further investigation. Small factories for decorating aloe fibre can be started by small capitalists.

9. *Ginning factory and flour mill.*—The district is rich in cotton, but there is no ginning factory at present. The total production in 1921-22 was about 126,000 maunds of kapas (seed cotton). Out of this quantity about 90,000 maunds of kapas is exported and 35,000 maunds is ginned locally by hand charkhis. There is thus a good field for a ginning factory which can be started at Muzaffarnagar proper or Khatauli which are both railway stations on the North-Western Railway main line.

There is scope for a big flour mill too. Muzaffarnagar and Khatauli are both big grain markets, specially for wheat. The ginning factory can combine with it the work of grinding wheat.

10. *Sugar factory.*—There is good field for a sugar factory, but to be paying, it should be started on a big scale.

11. *List of foreign articles seen in Muzaffarnagar markets, and the possibility of substituting them by Indian made things:—*

Group A.—Commodities in which Indian made goods prevail:—

- | | | |
|---------------------------|-----|--|
| 1. Blankets | ... | Wholly local. |
| 2. Scissors and knives... | ... | Meerut made and local. |
| 3. Boots and shoes | ... | Agra, Cawnpore and Delhi made. |
| 4. Cloth ... | ... | Local garha and mill made, long cloth, |

5. Lamp and lantern Mostly Balawali.
chimney.
6. Oils Delhi and Jaunpur made oils are mostly seen.

Group B.—Commodities in which both foreign and Indian goods are seen in equal quantities:—

1. Locks Both Aligarh and Hapur made ; also foreign American locks,
2. Pottery The home industry of earthen ware glazed pottery should be encouraged.
3. Stationery Paper is Indian, but other stationery such as ink, pencils and penholders is foreign. Delhi inks are quite good and can be used in place of foreign ones. Pencils made at Calcutta are seen in many offices at Meerut.
4. Caps The swadeshi movement has given an impetus to the use of Indian caps. Aligarh has succeeded in making decent felt caps, both soft and hard.
5. Matches Japan has nearly captured the market in matches, although a few made by the Gujarat Match Manufacturing Company, Ahmedabad, are also to be seen.
Attempts should again be made to manufacture matches in the province (see Dehra Dun Report) as the import tariff is favourable at present.
6. Brushes The use of Cawnpore and Meerut brushes is increasing.
7. Cigarettes Biris of Jubulpore are largely imported, but "Soissors" cigarettes are also in demand.

8. Soaps Delhi and Meerut soaps should largely be used in place of foreign ones.

Group O.—Articles which are wholly foreign:—

- (1) Dyes, (2) Scents, (3) Chemicals, (4) Ammunition, (5) Lamps, (6) Hand lanterns, (7) Sewing machines and needles, (8) Sewing cords, (9) Good razors.

Attempts are being made to make a clock at Meerut out of purely local machinery. If it succeeds, there is a hope for its use as the foreign watches and clocks are becoming dearer.

Kairana cutlery should be developed so as to supply modern needs;

CHAPTER IV.

STATISTICS.

1. Building material.

Kankar Quarries.

Tahsil.	Neighbouring village.	Approach from metalled road.	Estimated quantity obtainable in cubic feet.
Keirana ...	Jhinjona ...	10 miles from mile no. 24 of Shamli-Kairana Road.	500,000
Do. ...	Mant ...	11 miles from mile 17 of Musaffarnagar-Shamli Road.	150,000
Do ...	Gujarpur ...	6 miles from mile no. 25 of Musaffarnagar-Shamli-Kairana Road.	60,000
Budhana ...	Kharar ...	13 miles from mile no. 15 of Musaffarnagar-Shamli-Kairana Road.	60,000
Do. ...	Mohammadpur	6 miles from mile no. 18 of Musaffarnagar-Budhana unmetalled road.	90,000
Total , ...			8,60,000

2. Hardware.

(i) *Brass, art and domestic wares.*

Raw materials.—Broken utensils of bell metal, kaskut (an alloy of zinc and copper), white metal (alloy of German silver).

Imports.—1,000 maunds worth Rs. 32,000 from Delhi.

Exports.—400 maunds of vessels worth Rs. 36,000.

Local consumption.—400 maunds worth Rs. 36,000.

Manufacture.—On a cottage industry basis.

Wages.—About 6 annas a seer are paid as follows:—

The dealer gives one maund $7\frac{1}{2}$ seers of raw material and Rs. 12 as wages to the manufacturer who gives back

1 maund of finished vessels. The following are the details of the wages:—

		R.	a.	p.	
Moulding charges	...	1	4	0	} Paid to work- man on piece work.
Furnace	...	2	0	0	
Filing and cleaving	...	0	8	0	
Turning charges	...	2	4	0	
Fuel and chemicals, etc.		4	0	0	
Total		10	0	0	
Factory man	...	2	0	0	
GRAND TOTAL	..	12	0	0	

The profits of the factory man are increased by the saving in the raw material too which is about 2 seers worth Rs. 1-12. Thus the total earnings of the factory man are (Rs. 2 and Rs. 1-12) or Rs. 3-12 per maund.

The dealers profit is usually one anna a rupee.

Outturn.—About 800 maunds of lotas, katoras, huqqas, etc.

(ii) *Cutlery.*

Raw materials.—Waste railway stock, used files, shisham and sandalwood.

Quantity and value.—Files and railway stock iron about 10 maunds worth Rs. 200.

Manufactures.—On a cottage industry basis.

Articles.—Knives, nut-crackers and razors are manufactured.

Exports.—There is an indefinite and small export to Meerut and Hathras. About 150 dozens worth Rs. 800 were exported in 1922.

Local consumption.—50 dozens worth Rs. 275.

Number of persons employed.—12.

Wages.—The manufacturers do their own work or make to order from dealers and thus earn about Re. 1 a day.

Outturn.—200 dozen a year.

3. Leather

Saddlery, shoes and other accessories.

Raw materials.—Tanned hides and skins, swadeshi cloth.

Articles.	Quantity.	Value.	Place of origin.
		Rs.	
Hides	1,800	21,600	Local.
Skins	1,800	1,200	Do.
Factory dressed upper leather	500 thans	4,000	Cawnpore.
Factory dressed sole leather ...	100 "	2,000	Do.
Garhs	1,000 "	3,000	Local.
Refuse and torn pieces of durrie and cloth.	125 maunds	1,875	Do.
		at 8 annas a scer.	

Manufacture.—On a cottage industry basis.

Number of persons.—About 1,800 in all, out of whom 15 are employed in saddlery, etc.

Wages.—Average earnings are 12 annas a day if one pair of shoes is made.

Outturn.—(1) One family makes 8 pairs of ordinary shoes in 2 days. Thus annual outturn of shoes for 300 families of shoe makers is $\frac{8 \times 300 \times 360}{2} = 112,500$ pairs worth about Rs. 98,000.

(2) The outturn of charjamas depend on the market and orders; on an average 300 charjamas are made in a year.

4. Glazed pottery.

Raw materials.—Local earth from ponds and fields for which an insignificant amount is paid in cash or in kind.

Exports and imports.—Nil. All consumed locally.

Manufacture.—On a cottage industry basis.

Number of persons employed.—12.

Wages.—No wages are paid as no labourers are engaged. Average earnings are 6 to 8 annas a day in making domestic pottery.

Outturn.—Not definite as it depends on the markets and orders. On an average 500 chilams worth Rs. 40 and 250 handis worth Rs. 50 are made in a year.

5. Textiles.

(i) *Ginning of cotton (hand ginning).*

Raw materials.—Seed cotton 35,000 maunds.

Imports.—Ginned cotton : 500 maunds.

Locally ginned.—11,700 maunds ginned cotton.

Local consumption.—12,200 maunds ginned cotton, i.e., 9,900 maunds for quilts and 2,300 maunds for spinning.

Manufacture.—As a household industry at leisure hours.

Number of persons employed.—About 1,400 males and females.

Wages.—The ginning charges are the price of cotton seeds. One man gins 10 seers kapas or $3\frac{1}{2}$ seers cotton retaining $6\frac{1}{2}$ seers of seed as his wages. This comes to about Re. 0-14-0 at $7\frac{1}{2}$ seers per rupee.

Outturn.—Outturn per head per day is $3\frac{1}{2}$ seers cotton or 10 seers kapas. Annual outturn of 1,400 males and females for 100 days comes to $\frac{1400 \times 10 \times 100}{40}$ or 35,000 maunds of kapas or 11,700 maunds cotton and 23,300 maunds seed.

(ii) *Garha weaving.*

Raw materials.—Mill and hand spun yarn.

Yarn.	Quantity.	Value.	Chief places of origin..	Remarks.
	Maunds.	Rs.		
Mill spun ..	25,000	20 lakhs	Ahmedabad, Delhi.	Mostly 12½ seers and 14½ seers; also 20½ seers and 27 seers
Hand spun ..	5,300	3,39,000	3,000 maunds from Saharanpur and Delhi, 2,300 maunds local.	Corresponds to 7 seers or 8 seers; also 10 seers.

Manufactures.—Both as a cottage industry and on a small factory basis.

Number of persons employed.—3,000 families.

Number of fly-shuttle looms.—45 in small factories.

Wages.—If the weaver does the work on his own account he is helped by his wife and children and thus earn about Rs. 1-8 a day. If he is employed in a factory he is paid usually Re. 1 or Re. 1-4-0 a day. The permanent labour is engaged on monthly salaries varying from Rs. 10 to Rs. 30.

Weaving charges on piece wage system are as follows :—

(1) 54 inches wide 4 annas a yard. (2) 36 inches wide 2 annas to 2 annas 6 pies a yard, (3) 27 inches plain one anna a yard, (4) 27 inches twill one anna and 6 pies a yard.

Outturn.—One family weaves 12 yards garha or one piece of 27 inches width in a day weighing $1\frac{1}{2}$ to $1\frac{1}{4}$ seers. Thus 3,000 families produce 750,000 pieces weighing 30,000 maunds a year. At an average of Rs. 3-8 a piece the outturn in value comes to -33½ lakhs of rupees.

(iii) *Blanket weaving.*

Raw materials.—Wool and yarn.

Annual consumption.—2,500 maunds.

Local wool.—500 maunds.

Imported wool and yarn—2,000 maunds.

Imports.	Kind of yarn or wool.	Quantity.	Value.	Place of origin.
		Maunds.	Rs.	
1.	Black wool ..	250	6,250	Punjab.
2.	.. yarn ..	750	45,000	Aligarh district and Cawnpore.
3.	White wool ..	300	7,000	Punjab.
4.	.. yarn ..	600	51,000	Cawnpore and Aligarh district.
5.	Hill wool ..	50	5,000	Tibet and Kumaun division.
6.	Camel wool ..	150	6,000	Bajputana and Punjab.

Number of persons employed.—300 kamalyas in the district.

Wages.—Provincial manufactures employs 18 men giving 20 to 30 rupees a month to permanent employes and the Jatya Vaster Karyala 14 men. The kamalya families do their own work and earn about Re. 1 a day. To those engaged on piece wages the following charges are paid :—Carding 3 to 4 annas a

seer, spinning 4 to 5 annas a seer; milling 6 annas a blanket and weaving 12 annas per ordinary blanket. A carder earns Re. 1 to Rs. 2 a day; spinner earns 7 to 10 annas, but the carder's work is limited.

Outturn.—25,000 to 30,000 blankets a year worth Rs. 2,50,000 to Rs. 3,50,000.

(iv) *Calico printing.*

Raw materials.—Swadeshi cloth, dyes and blocks.

Quantity and value.—(1) Cloth—About Rs. 19,000 pieces of 12 yards each and about Rs. 57,000 in value.

(2) Dyes—About Rs. 6,500 in value.

Imports.—(1) About 500 yards of twill worth Rs. 125 are imported from Delhi for printing jamawar. Other cloth is local.

(2) Blocks worth about 300 rupees are annually imported from Lucknow, Jehangirabad and Farrukhabad.

Exports.—Nil.

Local consumption.—The whole is locally consumed.

Manufacture.—On a cottage industry basis.

Number of persons employed.—There are about 300 families out of whom 30 are skilled chhips at Kairana and Muzaffarnagar.

Wages—The following are printing charges :—

Razai Rs. 1-8, toshak Rs. 1-8, bedsheet Rs. 2, lihaf Re. 1-4, jamawar (coating cloth) Re. 0-3-3 to Re. 0-4-0 per yard.

Wages come to be about Re. 1-4-0 a day.

Outturn.—One chhipi can print 3 toshaks in 2 days. The annual outturn is estimated to be about 25,000 pieces only as the chhipis are not solely engaged with the work.

CHAPTER V.

DIRECTORY.

1. *List of Banks.*

1. Brahm Trading Company, Limited, Muzaffarnagar.
2. Superior Bank, Limited, Muzaffarnagar.
3. Muzaffarnagar Bank, Limited, Muzaffarnagar.

2. *List of Technical Schools.*

1. Government Blanket Weaving School, Muzaffarnagar.
2. A number of girls' schools in which embroidery and needlework are taught side by side with other subjects.

3. *Colton Weaving Factories.*

1. Radhey Sbiam Factory, Muzaffarnagar (with 3 looms).
2. Rama Weaving Factory, " (" 5 ")
3. Jai Kishen Factory, " (" 3 ")
4. Shekarpur Factory, Shikarpur (" 2 ")
5. Ramchandra Factory, Bhopal (" 3 ")
6. Lala Piyare Lal's Factory, Shamli (" 14 ")
7. Babu Lal's Factory, Jansath (" 5 ")
8. Bharat Weaving Factory, Khatauli (" 3 ")
9. Bhadder Sen Factory, Baghra (" 2 ")
10. Jat Factory, Shamli (" 5 ")

4. *Blanket Weaving Factories.*

1. Provincial Manufactures, Muzaffarnagar.
2. Jatya-Vaster Karyala, Muzaffarnagar.

5. *Blanket dealers.*

1. Rustamji, Esq., of Provincial Manufactures, Muzaffarnagar.
2. Biru Mal, Muzaffarnagar.
3. Jai Kishan Das, Muzaffarnagar.
4. Raghbir Saran, Muzaffarnagar.

5. Chuttan Lal, Muzaffarnagar.
6. Anand Swarup & Co., Muzaffarnagar.
7. Keshoji's Factory, Muzaffarnagar.

6. *Yarn dealers.*

1. Rustamji & Co. (Provincial Manufactures), Muzaffarnagar,
2. Amir Singh Gadarya, Muzaffarnagar.
3. Ugar Sen (Cotton Yarn dealer), Muzaffarnagar.

7. *Straw cap manufacturer and dealer.*

1. H. K. Faizi, Kairana.

8. *Skilled calico drier.*

1. Mohammad Yousuf, Kairana.

9. *Skilled weavers.*

1. Abdul Rahman, Muzaffarnagar.
2. Alamdar Husain, Muzaffarnagar.
3. Inder Raj Singh, Garhi.
4. Salam Uddin, Muzaffarnagar.
5. Bhagwat Dayal, Muzaffarnagar.
6. Ram Saran Das, Delbheria.
7. Man Raj Singh, Dodbli.
8. Pirthi Singh, Khatauli.
9. Bhadder Sen, Baghra.
10. Hoshyar Singh, Dhari Heri.
11. Ranjit Singh, Barla.
12. Bhoolen Singh, Barla.

10. *Mandis (market) for jaggery and molasses arranged in order of importance.*

1. Muzaffarnagar.
2. Khatauli.
3. Shamli.
4. Kithaura.
5. Tissa.
6. Miranpur.
7. Baraudha.
8. Bhopa.
9. Jansath.

11. *Grain markets arranged in order of importance.*

- | | |
|-------------------|--------------|
| 1. Muzaffarnagar. | 6. Miranpur. |
| 2. Khatauli. | 7. Bhuma. |
| 3. Shamli. | 8. Bitanda. |
| 4. Kandhla. | 9. Baranda. |
| 5. Kithaura. | 10. Bhopa. |
| 11. Jansath. | |

CHAPTER VI.

MISCELLANEOUS

General classification, railway rates and tariff schedule for chief articles.

Articles.	Railway coaching classification.		Railway rates, 1922.		Import duty.
	Railway risk. R. R.	Owner's risk. O. R.	Maximum pie per maund per mile.	Minimum pie per maund per mile.	
Grain and pulse ..	1	..	.85	.100	2½ per cent.
Cotton piece goods ..	6	4	.83 for 6th .62 for 4th	.166	11 "
Apparel ..	6	4	Do.	.166	11 "
Provisions and Oilman's Stores.	3	..	.58	.166	11 "
Sugar ..	2	..	.42	.100	15 "
Cigars and Cigarettes ..	6	..	.83	.166	75 "
Petroleum ..	4	2	.62 for 4th .42 for 2nd	.100	0-1-6 per gal.
Arms and Ammunition	8	..	1.04	.166	20 per cent.
Aniline Dyes ..	6	4	.83 for 6th .62 for 4th	.166	11 "
Agricultural implements (not machinery), packed.	1	..	.38	..	Free.
Agricultural implements (not machinery), un-packed.	2	1	.62	..	"
Paper ..	2 in bundles and 4 in cases.	..	.62	..	11 per cent.
Matches ..	9	8	1.25 for 9th 1.04 for 8th	.166	0-12-0 per gross.
Salt ..	4	..	.62	.166	Free.
Wood and timber ..	1	..	.38	.100	11 per cent.
Motors, cycles, etc. ..	8	6	1.04 for 8th .85 for 6th	.166	20 "
Chemicals ..	8	..	1.04 for 8th	.166	11 "
Drugs ..	4	..	.62	.166	11 "
Outlery ..	8	..	.83	.166	11 "
Musical instruments ..	9	..	1.25	.166	20 "
Silk waste and raw silk	4	..	.62	.166	11 "
Silk thread ..	6	..	.83	.166	11 "
Glass and plates, etc. ..	8	..	1.04	.166	11 "
Glass chimney, inkpots, etc.	6	4	.83	.166	11 "
Glass mirrors ..	9	..	1.25	.166	11 "

Articles.	Railway coaching classification.		Railway rates, 1922.		Import duty.
	Railway risk. R. R.	Owner's risk. O. R.	Maximum pie per maund per mile.	Minimum pie per maund per mile.	
Glass (broken) ..	1	..	.38	.100	11 per cent.
Machinery ..	4	2	.62 for 4th .42 for 2nd	.166 for 4th .100 for 2nd	2½ "
Iron and steel ..	2	..	.42	.100	2½ "
Nell metal and wares ..	6	..	.83	.166	
Nell metal and brass (scrap).	2	..	.42	.100	
Brass vessels and cooking utensils.	4	..	.62	.166	
Hides and skins ..	2	..	.42	.100	
Flour (atta) ..	2	..	.42	.100	
Coal, coke, etc. ..	1	..	.38	.100	
Cotton pressed ..	4	..	.62	.166	
Alse fibre ..	1	..	.38		

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