CHAPTER IV.

PRODUCTION AND DISTRIBUTION.

SECTION A.—AGRICULTURE AND LIVE-STOCK.

General statistics of agriculture.

Table No. XIV gives general figures for cultivation and irrigation, and for Government waste land; while the rainfall is shown in Tables Nos. III, IIIA and IIIB. Table No. XVII shows statistics of Government estates. Table No. XX gives the areas under the principal staples, and Table No. XXI the average yield of each. Statistics of live-stock will be found in Table No. XXII. Further statistics are given under their various headings in the subsequent paragraphs of this chapter. Land tenures, tenants, and rent, and the employment of field labour have already been noticed in Chapter III, at pages 57—60.

Agricultural calendar.

The total annual fall of rain and the manner in which it is distributed throughout the year are shown in Tables Nos. III, IIIA and IIIB. The following account of the chief agricultural operations for each month of the year was drawn up by Mr. Channing.

Asárh, June—July.—In this month the farmer hopes for plenty of rain in heavy showers with intervals of sunshine and westerly wind. As soon as the rain falls the land is ploughed over, and the sowing of the *kharíf* commences. If there is too much rain and cloudy weather without breaks of sunshine, the crops do not come up properly.

Sáwan, July—August.—Rain and sunshine are still both required: if there is too much rain the crops are liable to rot, or be mildewed; if there is too much sunshine with westerly wind, they dry up. The sowing of the later *kharíf* crops, such as *júár* is completed early in the month; and those formerly sown are weeded. Locusts occasionally attack the crops. Ploughing for the *rabi* commences.

Bhádaun, August—September.—Occasional heavy rain with intervals of sunshine is still required much as in *Sáwan*. The ploughing for the *rabi* and the weeding of the *kharíf* continue: and the crops have to be guarded from the depredations of birds. There is some danger of injury to the crops from young locusts. Indian corn and *barti* are cut.

Kuár, September—October.—A few occasional showers do good, but too much rain will blacken the *bájrá*, and cause the cotton pods to drop off. Sunshine and a drying wind are required to ripen the *kharíf* crops, but if a hot westerly wind blows, it dries them up. *Bájrá* is cut in the latter half of the month, and cotton begins to bear. The *júár* has to be watched. Ploughings for the *rabi* continue.

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Agricultural calendar.

and the land is gone over with a *mez* (a flat heavy piece of wood), and the surface levelled so as to retain the moisture. Towards the end of the month, the first sowings of gram and barley begin.

Kátak, October—November.—Unless the previous rains have failed, no rain is required in this month. The harvesting of *bájrá* and the autumn pulses is finished, the picking of cotton continues, and part of the *júár* is cut. The *rabi* crops have to be sown, and those which are to be irrigated are watered from the wells. There is but little leisure for the farmer during this month.

Mangsir, November—December.—Cotton pickings continue: the rest of the *júár* and the *pálú (Zizyphus nummularia)* and *pula (Munj grass)* are cut. The *rabi* sowings are completed, and the *kharíf* crops are threshed out and stored. Sunshine, but not with too strong a heat, is needed; rain is not required. The wells are hard at work irrigating the *rabi* crops.

Poh, December—January.—Towards the end of the month the winter rains are hoped for, but they should not continue too long together without breaks of sunshine and drying wind, or the crops will mildew. Until the rain falls the wells continue to be worked; afterwards ploughings for the *kharíf* commence. A southerly wind is considered a good sign of rain in the winter months. If the frosts are severe they damage the cotton, *arhar*, and gram.

Mágh, January—February.—In the beginning of the month, rain, as in the end of Poh, does good: if required, the wells are worked. Ploughings for the *kharíf* continue; melons are sown and tobacco is planted out; the cotton is cut down. A month of comparative leisure to the farmer.

Phagún, February—March.—Gentle westerly winds with sunshine and no rain are required; hail storms are feared. Sugarcane is planted out; ploughings for the *kharíf* continue, and the *rabi* crops have to be watched and watered.

Chait, March—April.—Drying westerly winds, not so violent as to scorch up or beat down the crops, are required with sunshine. Rain does harm; the danger of hail-storms continues. During the first half of the month wheat is still watered. The crops have to be watched, and during the latter half of the month, barley, *sarsau*, and gram are cut. Early cotton is sown on irrigated lands.

Baisákh, April—May.—The harvesting of the *rabi* crops is now completed; and the harvested crops are trodden out and winnowed. Hot westerly winds are desired: rain does harm. Tobacco, early cotton, and spring *júár*, where this has been sown for fodder, are watered.

Jeth, May—June.—Until about the end of the month the same kind of weather is required as in Baisákh. The *rabi* crops are now stored; tobacco is cut; early cotton and *júár* are watered; and if rain falls, the land is ploughed for the *kharíf*, and *bájrá* is sown. The *zamindárs* have little to do in this month, and employ their leisure in putting their houses in order against the advent of the rains.

In Baisákh the earth is said to be asleep and should be left to repose in quiet; Wednesday is a good day for sowing and Friday for harvesting; and on Tuesday the earth should not be dug, no should a plough be first started on that day.

Crop areas.

According to the Annual Revenue Reports the area sown for each harvest since 1867 has been as follows, (in thousands of acres):—

Year.	*Rabi.*	*Kharif.*	Total.
1867-68 ...	278	638	916
1868-69 ...	182	530	712
1869-70 ...	339	612	951
1870-71 ...	348	618	966
1871-72 ...	327	605	932
1872-73 ...	349	682	1,031
1873-74 ...	478	425	903
1874-75 ...	378	582	960
1875-76 ...	442	515	957
1876-77 ...	453	490	943
1877-78 ...	514	242	756
1878-79 ...	299	475	774
1879-80 ...	372	493	865
1880-81 ...	311	603	914
1881-82 ...	299	620	919
1882-83 ...	314	574	888
Average of 16 years ...	356	544	900

In this statement land cropped for both harvests (*dofasli*) is shown under each harvest, so that a deduction has to be made from the totals on this account. The average *dofasli* area may be estimated in round numbers at 20,000 acres. The average area cultivated during the ten years previous to 1877 was 907,000 acres; but if taken for the eight years previous to 1877 the average is 935,000 acres, while for the six years since 1877 the average is only 833,000. The figures given in the Revenue Reports are not trustworthy, but so far as they go, they seem to show that the average area actually cultivated in ordinary times is 9½ *lakhs* of acres; that of the 987,000 acres returned at settlement as under the plough (cultivated) 50,000 acres or about 5 per cent. should be considered as ordinarily fallow; that besides this, cultivation has on the average since 1877 fallen off from nine and one-third *lakhs* of acres to eight and one-third *lakhs* or by 10 per cent. but is now being extended again.

Agricultural appliances. Plough cattle.

Table No. XXII shows the number of cattle, carts, and ploughs in each *tahsil* of the district as returned at various periods in the Administration Report.

The number of plough-cattle returned at Settlement (1872—76) is as follows:—

Tahsil.	*No. of cattle as given in village Note-books.*
Palwal	25,424
Firozpur	20,378
Núh	23,426
Gurgáon	18,167
Rewárí	19,926
Total ...	112,321

This gives a pair of bullocks to every 17½ acres of cultivation, the proportion for the different *tahsils* being a pair to every 22 acres in Rewárí, 20 in Gurgáon, 16 in Palwal, 14 in Núh, and 16 in

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Agricultural appliances. Plough cattle.

Fírozpur. In the two former *tahsíls* the proportion of light soil is large, but on the other hand irrigation from wells is much practised; while in the three latter *tahsíls*, though well irrigation is not much practised, the prevalence of the harder soils makes a larger number of bullocks necessary, and the people generally say that a pair of bullocks cannot work more than 13 acres properly. In the Rohtak district according to an enumeration made during settlement in 1875, there were 97,036 bullocks, or a pair to every 18½ acres of cultivation. In the Delhí district, according to an enumeration made during settlement, there were 80,610 plough-cattle, or a pair to every 13 acres of cultivation. In the Kosí *tahsíl* of the Mathrá district, which adjoins *tahsíl* Palwal to the south and resembles it in its most important features, there were at settlement 11,547 plough-cattle, or a pair to every 14½ acres. From a comparison of all these figures and a consideration of the circumstances of the different districts, it may be said that in a time of prosperity, to keep up a good standard of cultivation throughout the district, there ought to be in the Gurgáon district about 110,000 plough-cattle, or a pair to every 18 acres of cultivation. The drought of 1877–78 was dreadfully fatal to the cattle, as the failure of rain not only prevented the growth of the usual supply of fodder, but deprived the cattle of the grass on which they depend during the monsoon months. Everything eatable was soon consumed, and the cattle died rapidly and in great numbers. The plough-cattle being the most valuable were preserved to the last; but so complete was the failure of fodder that not even the bullocks, on which the hopes of the peasant for future crops depend, could be preserved from starvation. According to an enumeration made at the time the loss of plough-bullocks was as shown in the margin.

Tahsil.	Former number.	Number dead.
Palwal	13,301	3,329
Núh	20,000	11,000
Fírozpur	19,860	8,422
Gurgáon	17,500	7,250
Rewárí	28,000	1,693
Total ...	98,661	31,694

This enumeration was evidently a very rough one, and not to be accepted as at all exact. The number of cattle previously existing is evidently understated in Palwal and overstated in Rewárí; but it may be taken as certain that in 1877-78 some 30,000 bullocks, or say a fourth of the plough-cattle then in the district, died; that the loss was least in the Hindú *tahsíls* of Rewárí, with its large area of well irrigation, and of Palwal with its canal and river; and greatest in the Musalmán *tahsíls* of Núh and Fírozpur, with their cultivation almost wholly dependent on the local rainfall and their thriftless Meo population.

Irrigation.

Table No. XIV gives details of irrigation. Further information will be found at pages 177 to 203 of Major Wace's Famine Report, compiled in 1878. At that time 10 per cent. of the cultivation was irrigated from canals, nine per cent. from wells, and the remaining 81 per cent. was wholly dependent upon rain. The following figures show the number of wells then existing in the district, with certain statistics regarding them :—

Number of wells.	Depth to water in Feet.		Cost in Rupees.		Bullocks per Wheel or Bucket.		Cost of Gear.	Acres irrigated per Wheel or Bucket.	
	From	To	Masonry.	Without Masonry.	Number of Pairs.	Cost in Rupees.		Spring.	Autumn.
1,671	...	20	500	20	2	120	22	9	3
2,156	20	30	700	30	2	120	22	9	3
2,267	30	40	800	35	2	160	22	8	3
2,073	40	60	950	40	2	160	22	7	3
1,187	60	80	1,000	50	3	300	25	6	2
426	80	...	1,200	...	3	300	25	1	2

The irrigation is wholly by rope and bucket. The higher spring-levels are found near the canal in Palwal, Núh, and Fírozpur, in the Landhoa valley in Fírozpur, and near the Jamná and the Najafgarh and Kotla *jhíls*. Water is found at greatest depths in the west of the Rewárí *tahsíl*. Of the wells shown above, 2,444 are unbricked. As might be expected from the varied configuration of the country, the depths to water are very diverse, ranging from under 10 feet to over 120 feet. In some parts of the district, as in the low-lying flooded-tracts of Núh, in the villages near the hills, where the depth to water is great, and in some tracts where the soil is good but the water somewhat deep and not very good, the area under well irrigation in years of average rain-fall is unimportant. In some of these tracts well irrigation, from the saltness or depth of the water, is practically impossible; in others, the wells exist and are worked when the season is unfavourable for dry cultivation, although the expenses are too great to make it worth while to use the wells much when the rains are favourable. In other parts of the district, and especially in *tahsíl* Rewárí and parts of *tahsíl* Gurgáon, the well-irrigated area is comparatively large and the produce raised on the well land is very important. The bucket and rope or *lao-charas* system of working the wells prevails throughout the district; the Persian-wheel is absolutely unknown. One immense well at Biwan, known as Rájá Bal's well, and dating from before the advent of the present Meo owners of the village in the Fírozpur *tahsíl*, has room for twelve *laos* and possesses an inexhaustible supply of water; but most wells have only one or to *laos*. The area which can be irrigated from a *lao* varies greatly according to depth and supply of water, and the character of soil and the season. For a well of about 30 feet deep about ten acres may be taken as an average. Where water is near the surface, *dhenklis*, *i. e.*, lever buckets, are sometimes used, especially for market gardening near towns; but the area thus irrigated is insignificant. In many parts of the district, *kachcha* wells, *i. e.*, wells without masonry cylinders, are numerous; they are constructed with cylinders made either of timber or of wattled branches, and last very various periods according to the character of the soil and the rain-fall; in other parts the character of the sub-soil makes the construction of such wells impracticable. The statement on the next page shows the relative importance of well-irrigation in various parts of the district. Information concerning the water-supply of the district will be found in Chapter I, (pages 2—7).

Statement showing amount of Land Revenue due to well irrigation for each assessment circle of Gurgáon District.

Name of Tahsil.	Name of Assessment Circle.	Amount of Land Revenue due to well irrigation.	Average area irrigable per *lao* in acres.	Percentage of total assessment due to well irrigation.
		Rs.		
GURGAON.	Bahora	7,077	12	21·99
	Pahár	1,169	7	9·21
	Dahri	637	7	4·05
	Sohná	2,858	7	14·73
	Sailáni	1,467	6	6·77
	Síhi	3,556	9	23·11
	Sáhibi	3,904	15	20·26
	Kásan	604	8	6·98
	Farrukhnagar	8,104	12	25·35
	Gurgáon	5,798	7	15·24
	Adjoining Dahar	900	8	8·38
	Total ...	36,074	...	...
REWARI.	Sháhjahánpur	1,816	7	16·22
	Pahár	7,134	7	20·89
	Kansáoti	6,762	11	24·75
	Rewári	5,826	4	24·98
	Sáhibi	19,517	11	30·82
	Pálháwás	6,245	10	21·33
	Magda Salt	9,539	11	18·59
	Mundi	5,205	8	20·89
	Total ...	62,044	...	...
PALWAL.	Bhuder	1,686	9	12·99
	Dahri	2,889	8	16·39
	Khádar	1,449	8	11·51
	Khádar Bángar	4,221	8	13·85
	Bángar	20,317	7	9·51
	Total ...	30,562 *27	...	...
NUH.	Bángar	6,268	6	5·68
	Táorú	6,777	7	16·37
	Dahar	3,587	5	2·98
	Total ...	16,632	...	...
FIROZPUR.	Chiknot	540	5	2·77
	Landoha	2,016	3	3·91
	Mándíkhera	3,941	12	14·13
	Bhuder	8,082	6	16·35
	Púnáhána	5,024	6	6·60
	Total ...	19,603	...	...
	GRAND TOTAL ...	146,942	8	...

* From Tánk.

Tahsil.	At Settlement. 1872-76.
Palwal	12,621
Firozpur	5,378
Núh	4,456
Gurgáon	15,638
Rewári	36,492
Total	74,585

According to the Settlement measurements (1872-76) the area actually irrigated from wells was then 74,585 acres, distributed as shown in the margin.

The number of wells at Settlement, and the number actually used this year (1882-1883) are as follows :—

Tahsil.	No of wells at Settlement.			No of *laos* fit to use at Settlement		Average area irrigable (in acres) as estimated at Settlement.		Actually in use 1883.				Average area actually irrigated. 1883.	
	Out of use.	Fit to use.						Wells.		*Laos.*			
		Pakka.	*Kachcha.*	*Pakka.*	*Kachcha.*	Per well.	Per *lao.*	*Pakka.*	*Kachcha.*	*Pakka.*	*Kachcha.*	Per well.	Per *lao.*
Palwal ..	286	1,325	742	2,083	748	10	7	885	242	1,224	235	8	6
Firozpur ..	144	1,146	389	1,772	236	8	6	613	104	859	104	8	6
Nuh ..	183	1,131	219	1,704	192	8	6	602	101	782	101	7	6
Gurgaon ..	350	1,601	81	2,102	83	12	9	1,397	62	1,799	62	11	9
Rewári ..	154	1,983	993	3,033	1,087	14	10	1,861	1,075	2,664	1,054	13	10
Total	1,117	7,186	2,376	10,694	2,346	11	8	5,358	1,584	7,328	1,556	11	8

Canal irrigation.

The introduction of the Agrá canal has been a great boon to the eastern part of the district, and greatly instigated the effects of the drought of 1877-78, especially in the Palwal *tahsíl*. Since its introduction in 1875, the areas irrigated in each harvest have been as follows :—

Year.	*Kharif.*	*Rabi.*	Total.
1874-75 ...	...	9,405	9,405
1875-76 ...	2,167	7,387	9,554
1876-77 ...	4,848	10,265	15,113
1877-78 ...	16,789	31,837	48,626
1878-79 ...	11,828	29,447	41,275
1879-80 ...	5,830	5,175	11,005
1880-81 ...	9,814	31,054	40,868
1881-82 ...	14,875	28,105	42,980
1882-83 ...	16,212	about 28,000	44,000

The area irrigated naturally varies with the nature of the rainfall, and was largest in the year of severest drought (1877-78), and smallest of late years in 1879-80 when the rainfall was unusually abundant. The irrigation is distributed as follows :—

Tahsil.	No. of villages in which irrigation takes place.	Area irrigated (in acres)		Percentage of average on total cultivated area of *tahsil.*
		In 1881-82.	In 1882-83.	
Palwal ...	101	25,494	26,374	13
Firozpur ...	11	2,297	2,414	1½
Núh ...	25	9,974	12,145	5
Total ...	137	37,765	40,933	9

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Canal irrigation.

Palwal *tahsíl* thus benefits most from the canal, and in that *tahsíl* it has largely supplanted well irrigation. A number of new distributaries are now in course of construction or about to be commenced, and it is probable that the next few years will see a further great development of canal irrigation in this district. The presence of the canal must have greatly increased the produce of those parts of the district during the years of scanty rainfall; but it has not been an unmixed benefit, for, as already noted, it has caused all *kachcha* wells in its neighbourhood to fall in; and in some villages it seems to have helped to cause land to fall out of cultivation by cutting off a part of their area and lengthening the distance daily travelled by the peasant to and from his fields by making him go round by a distant bridge. The fever which decimated the villages in its neighbourhood in 1878 was by some ascribed to the introduction of canal irrigation into a dry country; but the fact that in the following year the parts of the district away from the canal suffered just as much from fever tells against this supposition.

Manure and rotation of crops.

The following description of the use of manure and the system of rotation of crops, as practised in the district, was furnished for the Famine Report of 1879 (page 247.)

"Percentage of cultivated area which is manured :—

	Constantly manured.	Occasionally manured.	Not manured.	Total.	Remarks.
Irrigated land ...	19	25	56	100	Percentage of *dofasli* on cultivated, 3 per cent.
Unirrigated land	2	2	96	100	
Total ...	5	6	89	100	

"The average weight of manure given to the acre per annum on land constantly manured is 200 maunds. The average weight of manure given to the acre per annum on land occasionally manured is 300 maunds every second year. Little attention is paid to any regular course of cropping. The unmanured land is generally cultivated only for one harvest, and the rest it gets during the other harvest is thought sufficient. *Júár* is not sown in the same land two years in succession. Cotton is not sown after *bájrá*. In all other cases, in deciding what crop to sow, regard is paid to the kind of soil and amount of rain-fall, without any consideration as to what the previous crop was. The second crop most commonly taken is gram, or more rarely barley and gram after *bájrá*: occasionally, if the rains have been very heavy and the prospects of the *rabi* are good, the *júár* is cut before it is ripe, so as to make room for the second crop."

Principal staples.

Table No. XX shows the areas under the principal agricultural staples. The remaining acres under crop in 1880-81 and 1881-82 were distributed in the manner shown below :—

Crop.	1880-81.	1881-82.	Crop.	1880-81.	1881-82.
Kangni ...	677	155	Other drugs and spices ...	694	671
China ...	361	108	Linseed ...	10	...
Matr ...	46	120	Mustard ...	3,102	2,608
Másh (Urd) ...	4,127	2,954	*Til* ...	1,221	2,309
Múng ...	12,068	10,237	*Tára Mira* ...	2,930	2,965
Masúr ...	106	157	Hemp ...	1,069	317
Arhar ...	295	922	*Kasumbh* ...	313	428
Coriander ...	342	112	Other crops ...	27,183	46,709
Ginger ...	1	...			
Chillies ...	551	445			

The following description of the principal staples and of the method of their cultivation is extracted from Mr. Channing's Settlement Report:—

Cotton.

The area found under cotton at the settlement measurements was 76,341 acres; of this some 72,000 acres belonged in nearly equal shares to the Palwal, Firozpur, and Núh *tahsils*; very little cotton is grown in Rewárí or in Gurgáon, except towards Sohná and Sailáni on the borders of Núh. The cotton of the Firozpur valley is esteemed the best. The estimates of the yield of uncleaned cotton per acre varied in different circles from 3½ to 6½ maunds; and amounted in the whole district to 374,840 maunds, an average of about 4 maunds 36 seers per acre; the yield of cleaned cotton is ordinarily reckoned one-third of that of the uncleaned. Cotton is sown in the end of *Chait*, March—April, or in *Baisákh*, April—May, on wells, or where there are other means of irrigation; and on rain lands in *Asárh*, June—July, as soon as the first rain falls. The land is generally ploughed three or four times, commencing in *Mágh*, January—February; the seed is sown broad-cast, having been first rolled in cowdung, so as to separate the individual seeds; about eight seers go to the acre. Cotton sown on wells has to be watered every fifteen or twenty days until rain falls: weeding is needed three or four times; ten labourers will weed half a *bigha* in a day for a rupee. The early sown cotton begins to bear in *Bhádaun*, August—September, and the later sown in *Kátak*, October—November; the plants continue to bear until they are killed off by frost; and the great advantage gained by sowing early cotton is that it generally brings out all its pods before the frost comes. If there is too much rain, or if, as in 1877, too much hot westerly wind, the pods are not formed. At the time of the settlement most of the cotton grown was sown on rain lands; but no doubt the Agrá canal will cause a great extension of the cultivation of early cotton in Palwal and the adjoining parts of Núh and Firozpur;* and both the area under cotton and the average produce will from this cause tend to increase. On the other hand, years in which the rains begin late will ordinarily be marked by a great falling off in the area under *bárání* cotton; and when the rains are late or the frosts early, the out-turn will be affected. Only one kind of cotton is grown in the district; it is the ordinary native kind. The plants are not allowed to stand for a second year.

Wheat.

The area under wheat at Settlement was:—

			Acres.
Chàhi	...	...	... 11,578
Dahri	...	...	... 32,940
Bárání	...	...	... 20,469
		Total	... 64,987

In addition to this, 19,123 acres were found under wheat mixed with gram, and 2,558 acres under wheat mixed with barley. Gurgáon is not distinctively a wheat-growing district; the total area cropped with wheat, either alone or mixed, amounted to only some 8½ per cent. of the total area under crop; probably the Agrá canal will cause

* The area under cotton irrigated from the Agrá canal in 1878-79 was 7,896 acres, and in 1883-84 14,000 acres.

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Wheat.

a considerable extension of its cultivation.* Taking the *tahsils* in order, in Gurgáon wheat is mainly grown on the flooded lands near the Najafgarh *jhíl*, and on those in the Sailáni and Bahora circles; in Rewárí it is almost entirely a *chàhì* crop, and is found chiefly in the Magda Salt and Sábibi circles; the sandy soils which prevail over the greater part of Gurgáon and Rewárí are ordinarily too poor for wheat; in Núh not much wheat is grown in the Táorú and Bángar circles; but the low-lying Dahar circle with its strong soil and abundance of water contained, at the settlement measurements, one-third of the total area under wheat in the district; in Palwal, wheat and barley are grown in fairly equal proportions on the well-lands, and wheat is the distinctive spring crop of the *khadar* soils. In Fírozpur, the Chiknot circle with its heavy black soil shows, like the neighbouring tract in Núh, a large area under wheat, but in the other circles barley predominates. In short, where natural irrigation is abundant and the soil contains a large proportion of clay, there wheat is the favourite grain; elsewhere the preference is given to barley, which can do better on the lighter soils and requires less manure and less irrigation. Mr. Channing's estimates of yield per acre varied from 9 maunds to 16½ maunds on well lands, from 6 to 11 maunds on *dahri* lands, and from 4 to 8 maunds on *bàràni* lands: he estimated the total yield of *chàhì* wheat at 141,191 maunds, being an average of about 12 maunds 8 seers per acre; that of *dahri* wheat at 329,733 maunds, or an average of about 10 maunds per acre; and that of *bàràni* wheat at 142,583 maunds, or an average of a little under 7 maunds per acre. To this may be added the estimated produce of wheat with barley, 23,797 maunds, averaging about 9 maunds 12 seers per acre, and 162,817 maunds of mixed wheat and gram, averaging about 8½ maunds per acre; wheat and barley mixed are more commonly sown on well lands than wheat and gram, and hence the average produce per acre is larger: total 613,507 maunds unmixed wheat and 186,614 maunds with gram or barley. In years of at all deficient rain-fall, the production of wheat will be especially liable to contract, except on lands protected by artificial irrigation; and even on the well lands, the tendency under such circumstances would be to supplant wheat by barley, as the latter requires fewer waterings. For wheat the land ought to be ploughed five or six times; the seed is sown with a drill in November or the beginning of December, one maund to the acre, 1 maund 8 seers on *chàhì* land. If the rainy season has been a good one, wheat on *chàhì* land is sown without further irrigation; otherwise the land is given one watering (*paleo*), and ploughed over two or three times, and then the seed is sown. The crop is then watered every twenty days or so, getting some three to five waterings according to the character of the winter rains; it is sometimes, but not generally, weeded once; and is reaped in the beginning of *Baisákh*, *i. e.*, about the middle of April.

Barley.

The areas under barley at settlement were—

* The area under wheat irrigated from the Agrá canal in 1878-79 was 6,475 acres, besides 983 acres under wheat mixed with barley or gram; and in 1882-83, 7,900 and 5,650 acres respectively.

† The area under barley irrigated from the Agrá canal in 1878-79 was 10,684 acres, in addition to 6,130 acres barley mixed with gram; and in 1882-83, 1,550 and 7,600 acres respectively.

	Acres.
Chàhì	53,629
Dahri	11,023
Bàràni	41,657

Barley.

and under barley mixed with gram, 72,499 acres; this acreage amounts to about 17½ per cent. of the total area under crop. Of the *chàhì* barley, more than one-half belongs to *tahsìl* Rewárí, and nearly one-fourth to *tahsìl* Gurgáon; in Gurgáon too the tracts which give the largest areas under *chàhì* barley are the circles nearest Rewárí. Barley is indeed the predominant crop of the well lands throughout the district, except along the Jamná; but where the soil is light and sandy, as in the Gurgáon and Rewárí *tahsìls* and circles Táoru of Núh and Bhuder of Palwal, there its predominance becomes an almost exclusive possession. The estimates of the yield of *chàhì* barley per acre varied in the different circles from 12 to 17½ maunds, and amounted on the whole *chàhì* area to 803,836 maunds, an average of about 15 maunds per acre. The barley of the *dahri* lands belongs mostly to the Gurgáon *tahsìl* and the southern part of the Fírozpur valley; barley either alone or mixed with gram is the ordinary crop of the sandy flooded soils. The estimates of the produce in the different circles varied from 10 maunds to 13½ maunds per acre, and amounted in the whole district to 126,054 maunds, an average of a little under 11½ maunds per acre. The extent to which the unirrigated lands are sown in any given year with barley or barley and gram varies greatly according to the character of the rains; when these have been good, large areas are thus sown in *tahsìls* Palwal, Fírozpur and Núh, and to a smaller extent in Gurgáon and Rewárí: as a general rule, it may be said that in a favourable season barley and gram can be produced everywhere, except on the very poor and sandy soils: but it is pre-eminently the spring crop of the Bángar circles of Núh, Palwal and Fírozpur, and the south of the Fírozpur valley: the out-turn depends mainly on the winter rains. The estimate of the total out-turn was—*bàràni* barley, 300,708 maunds, or 7 maunds 9 seers per acre;—barley and gram 544,801 maunds, or about 7½ maunds per acre;—total production of barley, and barley and gram, 1,775,309 maunds. Barley is sown at the same time as, or some ten days before wheat; like wheat, it is sown with a drill, and the same amount of seed is required per acre. The land is ploughed once or twice less often than wheat, and it can do with one or two fewer waterings, and it is rarely, if ever, weeded. It is cut some fifteen days before wheat.

Gram.

The only other spring crop which occupies any large area is gram, shown at settlement as grown in 68,986 acres. Gram can be produced in most soils, except in loose *bhur*, and is the crop which grows best in very hard clay, such as is found in low-lying lands liable to long-continued flooding. The estimates of its out-turn per acre varied from 5 to 10 maunds in different circles, and amounted in the whole district to 528,616 maunds, or a little over 7½ maunds per acre. Gram is sown with a drill, some 20 seers to the acre, in October or November, before barley, and after only one or two ploughings; it is rarely, if ever, irrigated from wells, nor is it weeded;*

* The returns of the Agrá canal show 3,499 acres under gram in 1878-79, and in 1882-83, 12,725 acres.

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it is cut at about the same time as wheat, and then, after the pods have been separated from the plant by tossings about with a fork, is trodden out in the usual manner. It is liable to suffer from frost, and is said also to be damaged by lightning when in flower.

Bàjrá.

Bàjrà is the great *kharìf* crop of all the more sandy parts of the district; and in some circles, such as the Táorú circle of Núh and several of the Gurgáon and Rewárí circles, is by far the most important article of produce. It occupied in the year of settlement measurement 289,962 acres, or nearly 29 per cent. of the area under crop. The estimates of its yield per acre varied from 4 to 6 maunds in different circles, and for the whole district gave a total yield of 1,592,850 maunds, or an average of about 5½ maunds per acre. It is sown as soon as the rains fall both broad-cast and drilled, about a seer-and-a-half to the acre: the land is ploughed two or three times to prepare it, and the crop requires one or two weedings: it is only irrigated in droughts;* and its harvesting commences about the end of September, and it is generally off the ground in time for a second crop of gram or barley and gram to be sown, if the season has been a good one.

Jùàr.

In the better soil *jùàr* takes the place of *bàjrà* as the main *kharìf* crop: its predominance is especially marked in the Bángar circles of Núh, Palwal, and Fírozpur. The settlement statements show 155,228 acres under *jùàr*, or about 15½ per cent. of the total area under crop; the estimates of its yield per acre varied in the different circles from 5 to 8 maunds, and amounted to a total of 1,210,576 maunds, an average of about 7 maunds 33 seers per acre. *Jùàr* is sown in July and up to the middle of August, and it is cut in November. The seed sown amounts to about 10 seers per acre, or when the plant is cultivated for fodder (*chàr*), to about a maund or a little over. *Jùàr* is not generally irrigated,† but does sometimes receive one or two waterings; it is weeded once, unless it is sown for fodder. On the shores of the *jhìls*, *chari* is sown in *Phàgan* (February—March) and reaped in *Asàrh* (June—July): the settlement measurements did not always properly distinguish between *jùàr* and *chari*, and the area returned as *chari* in addition to the 155,228 acres mentioned above was only 3,495 acres. Much of the crop that is planted mainly for fodder is allowed also to stand, until the heads of grain are ripe: the difference between this and *jùàr* proper then is, that the *chari* stalks are more slender and the heads of grain much smaller.

Moth, màsh, mung, lobià, gùàr, masur, arhar.

The only other crops which are cultivated so largely as to be reckoned among the staples of the district are the autumn pulses, and as these are generally grown intermixed with *bàjrà* and *jùàr*, the returns of the settlement measurements do not fairly represent the extent of their production. *Moth* (*Phaseolus conitifolius*) was, however, entered on 124,347 acres, mainly in Rewárí and to a smaller extent in Gurgáon. It is the crop best adapted to the very loose sandy soils which are found in those *tahsìls*, and especially in the

* The Agrá canal returns show 300 acres under *bàjrà* in 1878-79, and in 1883-84, 465 acres.

† The Agrá canal returns show 1,041 acres under *jùàr* and 841 acres under *chari* in 1878-79; and in 1883-84, 5,100 acres, 5,100 acres of *jùàr* and 20 of *chari*.

western part of the Rewári *tahsíl*. It is most frequently sown with *bájrá*, but if sown separately the land is ploughed three or four times; and about 10 seers per acre of seed is sown; the crop is weeded once and is cut in *Kátak* (October—November). There are two varieties cultivated in the district, *moth* and *gora moth*; the latter spreads more and does not climb like the former, and hence is preferred for sowing under cotton. The estimates of the yield of *moth* averaged about 4 maunds 6 seers per acre.

Moth, másh, múng, lobiá, gúár, masúr, arhar.

Másh (*Phaseolus radiatus*) requires a better soil, and is more commonly grown with *júár*; *múng* (*Phaseolus mungo*) is commonly sown with *bájrá*; *lobiá* or *chaula* (*Dolichos sinensis*) is chiefly grown in Rewári; *gúár* (*Cyamopsis psoraloides*) is a pulse which is cultivated chiefly on the hard gritty soils near the hills, where nothing else will grow; it is used as fodder for bullocks. In the *khádar* lands peas and *masúr* (*Ervum lens*) are grown to a small extent in the spring. *Arhar* (*Cojanus flavus*) is rarely seen in the north and west of the district; but is generally to be found sown in lines through the cotton fields in Palwal, Fírozpur, and the part of Núh which lies east of the hills. It is sown at the same time as cotton, and does not ripen until the commencement of the hot weather; it is very liable to be killed by frost, and it is rather rare for it to survive the winter; but it is said to aid in protecting the cotton from the cold. Its leaves are used for fodder, and its stem and branches for fuel, while the pulse is little esteemed; so that its perishing in the winter is of the less consequence.

Sugarcane.

Sugarcane in the Gurgáon district is never irrigated from wells; its cultivation is confined to the *dahar* lands. The settlement measurements show only about 400 acres under sugarcane; and almost the whole of this was cultivated round the banks of the Najafgarh *jhíl*. It is also grown on the banks of the Kotla *jhíl*, in some of the *dahar* lands of the Fírozpur valley; and in 1876 it was very largely cultivated all along the lands in the Púnáhána *pargana*, which had been submerged in 1875 by the floods which came from the direction of Ujina. The Agrá canal will probably lead to a great extension of this crop.*

Other crops.

There are no other crops which call for any detailed notice: tobacco is grown in the manured lands close to the villages; *sarsaun* (*Brassica campestris*) is generally sown in lines through the wheat and barely crops, and is most commonly cut green for fodder; *til* (*Sesamum orientale*) and *tára míra* (*Brassica eruca*) are also cultivated to some extent, the former generally in the same fields as *bájrá* or cotton, and the latter on inferior lands; a little Indian corn is grown near the village sites, especially in the three southern *tahsíls*; † safflower is mainly confined to the Palwal *tahsíl*; that of Rámgarh near Hasanpur is noted for its excellence: a little rice is grown in the Kotla *jhíl*, and so also is *barti* (*Panicum brizoide*), a plant which is

* The Agrá canal returns for 1878-79 show only 135 acres under sugarcane, but the people of the tract watered by this canal are as yet strangers to its cultivation. No cane was formerly raised there; but in 1882-83, 2275 acres of it were irrigated.

† Its cultivation is being extended by the Agrá canal, the returns of which show 1,258 acres under Indian corn in 1878-79.

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Other crops.

sown in June—July, and cut in October and November; * on the well lands of some villages near Rewárí, cummin seed, coriander seed, and *aspyhol (flicus fleawort*, according to Fallon) are somewhat largely grown: melons are grown on the banks of the Najafgarh *jhíl*, and elsewhere in similar situations: the cultivation of indigo is rapidly extending along the canal †; two kinds of hemp are grown, one separately, and the other as a hedge round cotton fields; nearly 4,000 acres are shown under various garden crops; and in the autumn of 1877, when the rains failed, the more industrious among the *zamindárs* in many places set their wells to work and cultivated *chinan (Panicum miliaceum)*, a crop which ripens in sixty days and is said to produce some 19 maunds per acre, but requires continual irrigation.‡ *Singhara* (water nut) is commonly grown in the village ponds.

Average yield. Production and consumption of food-grains.

Table No. XXI shows the estimated average yield in lbs. per acre of each of the principal staples as shown in the Administration Report of 1881-82, while the more detailed estimates, which were used to calculate the value of the gross produce for purposes of assessment in the settlement of 1880, have already been noticed in the description of the several staples just given. The average consumption of food per head has already been noticed at pages 39-40. The total consumption of food grains by the population of the district, as estimated in 1878 for the purposes of the Famine Report, is shown in maunds in the margin. The figures are based upon an estimated population of 696,646 souls. On the other hand, the average consumption per head is believed to have been over-estimated. A rough estimate of the total production, exports, and imports of food-grains was also framed at the same time; and it was stated (page 151, Famine Report) that there was an annual surplus of 10 *lakhs* of maunds of wheat, gram, barley, *bájrá*, *júár*, and *moth* available for export to Delhí, Jaipur, Alwar, and Kari.

Grain.	Agriculturists.	Non-agriculturists.	Total.
Wheat ..	..	305,137	305,137
Inferior grains ..	1,987,491	1,076,954	3,064,445
Pulses ..	1,192,445	412,883	1,605,278
Total ..	3,179,936	1,794,924	4,974,860

Cattle, sheep and goats, horses and camels.

Table No. XXII shows the live-stock of the district as returned in the Administration Reports. The figures in the margin are taken from the settlement statements, and show the number of cattle, sheep, and goats as they stood before the famine of 1877-78, when large numbers either died from hunger, were killed for food, or were sold.

Plough cattle.	Other cattle.	Sheep.	Goats.
138,443	210,038	20,058	53,347

* The Agrá canal returns show 80 acres under *barti* in 1878-79.

† Sixty-four acres of indigo were watered from the Agrá canal in 1878-79, and in 1882-83, 5,508 acres.

‡ The cultivation of *chinan* has been greatly increased by the Agrá canal, the returns of which show 1,290 acres under this crop in 1878-79 but some has been grown during the last few years.

Tahsil	Number of cattle at Settlement.	No. lost in 1877-78.
Palwal	78,978	15,903
Nuh	77,851	46,600
Firozpur	42,441	30,274
Gurgaon	64,939	39,349
Rewari	38,925	15,903
Total ..	303,134	146,679

The statement in the margin shows the number of cattle of all kinds at Settlement, and the number lost in 1877-78.

Although these figures are evidently not very trustworthy, it may be assumed that about 150,000 cattle, or nearly a half of the total number in the district, died in 1877-78. Probably the number of cattle of all kinds (bullocks, cows and buffaloes, including calves) in the Gurgáon district previous to the drought of 1877 was nearer four *lakhs* than three.

All these figures must however be accepted with caution. It is most difficult to obtain reliable statistics of live-stock without employing a special agency for making a simultaneous enumeration, as the people generally try to conceal their cattle in order to make their condition appear worse than it is, while the village accountants do not act upon any uniform system, some counting only bullocks actually in use, while others include young stock in their returns. According to Settlement Statement A, and the entries in the village note books, the number of plough cattle in the years 1872 to 1876, was 112,921, and the whole number of bullocks and cows 303,134; while an enumeration made by the village accountants under the Superintendence of Mr. Wilson, in the winter of 1882-83, gave the numbers as 80,963 and 156,450, respectively. The total loss during the drought of 1877-78, may be fairly estimated at 150,000, of which 30,000 were animals fit for agricultural labour. An enumeration made in August 1883, *i. e.* after about 6,500 head of cattle had been purchased with 2 *lakhs* of rupees advanced in loans by the government, gives the following results:—Bullocks and bull calves, 101,671; cows, 132,000; buffaloes, 47,000; sheeps, 25,000; goats, 74,000; horses, 3,600; mules, 37; ponies, 1,800; donkeys, 11,100; camels, 870; pigs, 7,850.

As might be expected from the small proportion of land uncultivated, Gurgáon is not a great cattle-breeding district. A large number of goats are grazed on the hills; they frequently are owned by butchers, who make them over to shepherds for their keep, on condition of receiving a certain share of the increase, generally one-half; the shepherd being also responsible for making good the number of the original flock. Plough oxen ordinarily sell for from Rs. 35 to Rs. 60. The average price paid for buffaloes bought in 1883-84 with loans from Government was Rs. 34. Buffaloes are occasionally used for the plough, but to so employ them is looked upon as a mark of poverty; so that while the buffalo cows are kept and well fed for their milk, the bull calves are ordinarily turned adrift to die of cold and hunger, or, if purchasers can be found, are sold to water-carriers or to dealers from the Panjáb. When cattle are from age no longer of any value, the Muhammadans use them for food; but the Hindús, who cannot kill them, leave them to pick up what they can in the fields, until they die of cold and semi-starvation. These neglected and useless animals naturally die in large numbers

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whenever fodder is at all scarce. There are a few baggage camels but none fit for riding. Donkeys are kept by potters and washermen, and pigs by the sweepers in nearly every village.

Government bulls and rams.

Fourteen bulls and three rams, supplied by the Hisár cattle farm, are now serving in the district. The bulls are distributed over the 5 *tahsíls* and are placed in charge of *zaildárs*. The progeny are much appreciated, but the bulls do not receive the care and attention which intelligent breeders would devote to such valuable stock. The rams are kept at Gurgáon and Farrukhnagar, and are sent out periodically to serve flocks of ewes, but the results are not yet very marked, and the Gadaríyá class seem to prefer their own rams.

Horse and mule-breeding operations.

As regards horse and mule-breeding, stallions were located at Khújúrka as early as 1825, and a second post was established at Hodal about the year 1864. In 1877, when the new system of horse-breeding was introduced, there were 2 stallions at each of these posts, and 225 mares were branded as fit to be served by them, *viz.*:—203 in Gurgáon district; 7 in Delhí; 43 in Muthra; 3 in Bhartpur state. In 1881, the Khújúrka post was abolished, and the mares belonging to it, transferred to other places. At present there are at Hodal—1 Norkfolk trotter, 1 English thorough-bred, 1 stallion donkey, 1 Persian donkey; and in the neighbourhood, 92 branded mares *viz.*:—65 in Gurgáon district; 26 in Muthrá; 1 in Bhurtpur state. Besides these, 46 branded mares of other districts are registered at the posts of Síkrí and Molhárband. The donkeys have served 300 mares since 1878, and many good mules have been produced. The number of foals registered since 1878, is 229. They are generally sold to dealers when quite young, and then lost sight of. There are no professional horse-breeders in the district, and no attempt has been made by the *zamíndárs* to rear their stock on sound and improved principles. No remounts have been purchased by cavalry officers from among the produce of branded mares, but 15 were lately obtained for the 1st Bombay Lancers from breeders at Gurianí, near the Rewárí border. A native Veterinary Assistant is employed by the horse-breeding department, and one by the District Committee. Twenty colts have been gelt by the former. There is no horse or cattle fair held in the district, but horses are sent for sale to Bulandshahr and Batesar, and young bullocks to Gugera in the Rohtak district.

SECTION B.—OCCUPATION, INDUSTRIES, AND COMMERCE.

Occupations of the people.

Table No. XXIII shows the principal occupations followed by males of over 15 years of age as returned at the census of 1881. But the figures are perhaps the least satisfactory of all the census statistics, for reasons explained in the Census Report; and they must be taken subject to limitations which are given in some detail in Part II., Chapter VIII of the same Report. The

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Occupations, Industries, and Commerce.

Occupations of the people.

figures in Table No. XXIII refer only to the population of 15 years of age and over. The figures in the margin show the distribution of the whole population into agricultural and non-agricultural, calculated on the assumption that the number of women and children dependent upon each male of over 15 years of age is the same whatever his occupation. These figures, however, include as agricultural only such part of the population as are agriculturists pure and simple; and exclude not only the considerable number who combine agriculture with other occupations, but also the much larger number who depend in great measure for their livelihood upon the yield of agricultural operations. More detailed figures for the occupations of both males and females will be found at pages 69 to 78 of Table No. XIIA. and in Table No. XIIB. of the Census Report of 1881. The figures for female occupations, however, are exceedingly incomplete.

Population.	Towns.	Villages.
Agricultural ..	10,582	337,122
Non-agricultural	61,677	232,467
Total ..	72,259	569,589

Table No. XXIV gives statistics of the manufactures of the district as they stood in 1881-82.

Principal industries and manufactures.

Mr. Lockwood Kipling, Principal of the Lahore School of Art, has kindly furnished the following note on some of the special industries of the district :—

"At Rewárí there is a large manufacture of brass-ware. The greater bulk consists, of course, of cooking utensils; but fancy articles involving chasing, engraving and parcel tinning are also produced and exported. The value of the articles produced in 1881-82 was estimated at Rs. 90,525. A selection from the brass wares usually sold was made for the Calcutta Exhibition by Mr. Christie of the Police, and included among some coarse and rough workmanship much that was good and characteristic. Lamps of different sorts, the standard *shamadán* and hanging lamps, cart-bells, inkstands and pen-cases, *hookahs*, temple-bells, and water vessels of different sorts, nearly all of which were in cast brass, made up the collection. Such ornament as was used was lightly chased and wanting in force and definition, and the finish left much to be desired. It must be remembered, however, that all these articles are intended to survive for a long time daily use by a rustic and heavy-handed people, and to be periodically scrubbed with sand and water. The construction of the cart-bell *(zang)* is curious, the mouth being closed by a number of leaf like plates turning inwards and upwards from the rim, like the recurved petals of a flower. This arrangement ought to produce a characteristic vibration which perhaps suggested the name *zang*. *Hookahs* are here made with ears or handles, parcel-tinned and engraved through the tin into the brass; like Moradábád ware, but without the black ground. The brass-wares of Rewárí are sent to various parts of the Panjáb and into Rájpútáná. Muslin is woven here as at Rohtak but there is not much trade. Glass bangles are made at Sohná and a few common carpets at Palwal and Hasanpur."

Shoes are manufactured at Jharsa, Sohná and other places; iron vessels at Darapur and Tánkrí in Rewárí, and coarse cotton and woollen fabrics, throughout the district; but none of these industries are of any importance, except the hardware manufacture of Rewárí. An inferior kind of salt was formerly made by the evaporation of brine in several villages in the neighbourhood of Núh, but the Sámbhar salt has now driven it from the market, and all the factories are closed. A better article called Sultánpurí salt is still manufactured

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in the neighbourhood of Farrukhnagar, and finds a market in Delhí, Meerut and Rohilkand. The cultivation and manufacture of indigo have lately been taken up largely in the Palwal *tahsíl*, and the industry is likely to get a firm hold in the district.

Course and nature of trade.

The staple products of the district are barley, wheat, gram, *juár*, *bájrá*, and oil seeds, and in ordinary seasons about one half of the gross produce is exported. Speaking generally, the inferior grains are kept for home consumption, and the wheat is exported. Formerly large stores were accumulated in good seasons, and kept for years in the hope of prices rising; but now that prices have been equalized throughout the country by the extension of railway communication, dealers are content with smaller profits and export quickly to any place where slightly higher prices rule. The barley of this district is much sought after for making malt, and large consignments are sent from Rewárí to the breweries of Naini Tál and Mussoorie. The opening of the railway to Hisár and Sirsa has lately caused a great influx of grain from these districts, and a consequent general fall of prices in Rewárí and its neighbourhood. The principal grain-marts are Rewárí, Núh, Sohná, Fírozpur, Palwal and Hodal. Produce is exported by road from the Palwal and Fírozpur *tahsíls* to Agra, Muthra and Delhí, and from Gurgáon and Rewarí; and by railway to Delhí, Alwar, Bombay and Gujerát.

Rice is imported from Oude, Patna and Bengal. Cotton is largely cultivated in Fírozpur, Núh and Palwal. The produce of the southern part of the district, and of adjacent parts of Bhartpur and Alwar is collected at Fírozpur, and exported thence to Muthra, Agra, Cawnpore and Lucknow by road. Owing to the want of cotton presses, and the prohibitive rates of freight for impressed cotton, the railways have not yet very largely affected this trade; but it is on the decline, and the contemplated establishment of a press at Alwar is likely to ruin Fírozpur as an emporium for cotton. Rewárí imports raw cotton for the supply of village looms, and yarn for the manufacture of superior fabrics in the town, which are again exported to Delhí and the states of Rájpútáná.

Salt for home consumption is imported from Sámbhar and Lahore, and the produce of the Farrukhnagar factories is exported to the N.-W. Provinces and Rohilkand. The trade in wool is of little value. Small quantities are sent to Delhí, but nearly all the produce of the district is required for local consumption. Young stock are largely reared by the Gujars of Mewát and sent to Batesar and other fairs for sale, before they are ready for labour, especially in seasons of drought when pasturage is scarce. Sheep and goats are kept mostly for local use. The produce of oil and *ghí* is not sufficient for the wants of the district. A little sugar-cane is grown along the Agra canal, and near the Najafgarh *jhíl*, but the cultivation is not extending rapidly, and large quantities of unrefined sugar are imported from Rohtak, Delhí, Karnál, Bulandshahr and Meerut, for local consumption, and refined sugar from Muzaffarnagar. Rewárí also re-exports this commodity to Rájpútáná.

The produce of the Rewárí slate quarries now forms an important article of export.

There are no statistics of the general trade of the district, but table No. XXV gives particulars of the river traffic along its border.

The exports and imports of food grains have already been noticed at page 86.

SECTION C.—PRICES, WEIGHTS AND MEASURES, AND COMMUNICATIONS.

Prices, wages, rent rates.

Table No. XXVI gives the retail *bázár* prices of commodities for the last twenty years. The wages of labour are shown in Table No. XXVII and rent-rates in Table No. XXI; but both sets of figures are probably of doubtful value.

Prices of agricultural produce.

The following statement shows the prices assumed by Mr. Channing on the average of the 20 years ending 1873 as the basis of his valuation of produce for the produce estimate (in seers per rupee):—

Tahsíl.	Wheat.	Gram.	Barley and Gram.	Barley.	Cotton uncleaned.	*Júár.*	*Bájrá.*	*Moth.*
Gurgáon ...	30	35	38	40	12	39	33	40
Rewárí ...	28	34	..	39	....	39	34	38
Palwal ...	30	38	41	43	11½	37	34	...
Núh ...	27	35	...	37	13	38	34	35
Firozpur ...	30	40	...	44	12	40	36	42
Average of all five *tahsils* ...	29	36	40	41	12	39	34	39

It will be noticed that the prices assumed for the different *tahsíls* do not vary greatly from one another, nowhere being more than 10 per cent. above or below the average of the five *tahsíls*. The prices assumed for Firozpur *tahsíl* are the lowest, which is as might be expected, seeing that it is farthest from the railways and the great centres of trade. Mr. Wilson's enquiries made independently of Mr. Channing's gave the following results for the two towns Rewárí and Palwal:—

Produce.	Average price for a period of			Precentage of increase.	
	15 years ending 1837.	20 years ending 1857.	20 years ending 1877.	Since 1857.	Since 1837.
Wheat	36	32	25	28	44
Gram	55	42	32	31	72
Barley	54	47	38	24	42
Cotton, uncleaned ...	18	19	9	111	100
Júár	53	44	32	37	66
Bájrá ...	46	42	28	50	64
Moth	52	44	30	46	73
Múng	45	38	27	41	65
Mash	42	36	24	50	75

It appears, then, that while there was a great rise in the price of every article of agricultural produce between 1837 and 1857, there has been a still greater rise in price since 1857.

hapter IV, C.

rices, Weights nd Measures, nd Communi-cations.

Rise in prices.

The following remarks are extracts from a memorandum drawn up by Mr. Wilson in 1879:—

"An inquiry has been held *de novo* into the market rates at which produce has sold for the 55 years ending with 1878 A.D., that is, from *Sambat* 1880 down to last year. The Superintendents were ordered to find out from the books of the grain dealers in all the principal markets in their several *tahsils* what were the rates at which they took the agricultural produce from the peasants immediately after harvest, the dates fixed for the *rabi* crops being *Baisákh Sudi* 3rd and *Jeth Sudi* 3rd, and those for the *kharíf* crops *Kátak Sudi* 2nd and *Mangsar Sudi* 2nd. An inspection of these figures will substantiate the following general inductions:—

"(1) The nearer the towns, the more nearly are the prices of any particular food grain equal. This was to be expected *á priori*.

"(2) The cheaper the food grain, the greater is the difference in its price *in different towns*, whether the comparison be made between two food grains, one of which is always much cheaper in one year than the other, or between the prices of the same food grain in different years when it is cheaper in one year than in another.

"(3) The cheaper the food grain the greater are the fluctuations in its price *from year to year*, whether the comparison be made between two food grains, one of which is always cheaper than the other, or between the prices of the same food grain in different years when it is cheaper in one year than in another. The inductions expressed in the last two clauses may be put in this way: In years of scarcity the prices of the same food grain in different towns, and of different food grains in the same town, approximate more closely than in years of plenty; and again, fluctuations in the price of food grains from year to year and differences in the price of the same food grain in the different towns, were much greater formerly when prices were low than now when they are high. It must be noted, however, that when prices are high, a difference of a few seers per rupee makes a greater difference in the price per seer than when prices are low.

"(4) All food grains are similarly, affected in price by the circumstances of the seasons. The fluctuations for the different food grains are very similar in their character. The prices of the different grains rose and fell simultaneously.

"(5) The fluctuations in price are so great and sudden that quinquennial averages are deceitful.

"(6) The history of the annual fluctuations of price may be summed up as follows:—

"(I take the Rewárí prices as the fullest, &c., because Rewárí is the chief grain market) The year 1823 A.D. (*Sambat* 1880) was a year of great plenty, and prices were as low as they have ever been since, gram selling at Rewárí at 75 seers. It was followed by a year of great scarcity, prices having risen so rapidly in one year that in Rewárí the cheapest grain was *júár* at 37 seers, or double the price of the cheapest grain the year before. This was followed by two hard years (1825 and 1826), during which no grain was cheaper than 44 seers per rupee. In 1827 came a sudden fall, and barley and *júár* could be had at 70 seers. For the next four years prices were very low, some grain being always obtainable at 60 seers; and then commenced a gradual rise which culminated in 1833 (the famine of 1890 *Sambat*,) when no grain could be had cheaper than gram at 26 seers. The next year saw a fall, which became still more marked in the following year, 1835, when prices had again reached their lowest, *bájrá* selling at 72 seers per rupee. Prices remained at this low rate for another year, and

Rise in prices.

then took place a very sudden rise, the cheapest grain rising from 73 seers in 1836 to 24 seers in 1837 (the famine of 1894 *Sambat*). Then came a very gradual fall of prices for the next nine years, the cheapest year being the last, when barley could be had at 49 seers, not nearly so cheap as before the famine. Then came a rise which was still greater the next year, 1848 (1905 *Sambat*), when barley was at 26; the next two years saw a sudden fall, and in 1850 barley was at the old price of 70 seers. The next three years saw a gradual rise, and by 1853 barley had almost doubled its price and was at 38 seers. Then a fall for two years, taking *moth* down again to 70 seers in 1855, followed by a steady rise for five years, culminating in the scarcity of 1860 (1917 *Sambat*). Then rather a sudden fall taking barley down to 53 seers in 1863, since which year no grain has been cheaper at Rewári at the Dasahra than 38 seers the rupee. This last fact shows how decided is the rise of price, and how much less the fluctuations have been during the last 16 years than they were before. The year 1863 was followed by a gradual and steady rise of price for six years to 1869 (1926 *Sambat*), following the famine year 1925, and for the next eight years up to 1877 there was a steady and gradual fall of prices, barley having declined from 22 seers in 1869 to 37 seers in 1877. Then came the scarcity of 1877-78 (1934 *Sambat*), which caused a sudden rise in one year to 22 seers again. There can be little doubt that this rise would not have been so sudden or so great, had it not been for the great demand for grain for Bombay and Madras, which occurred simultaneously with the scarcity in this neighbourhood. Prices still range high, and it is extremely improbable that they will ever again reach the low figures of 1863, still less those of 1855 and 1850. The spirited competition of the last two years has thoroughly aroused the enterprise of grain-dealers, and shown them how extensive is the market which they may find it to their interest to supply, now that the railway connects them with such distant marts; and they will find it to their interest to buy up grain when it shows signs of getting cheap, and stock it in hopes of a similar opportunity recurring.

"The rise in the price of uncleaned cotton dates from 1852, from which year there was a gradual and steady rise from 25 seers the rupee to 10 seers in 1860. In 1861 it fell to 15. It then rose gradually to 1863 and 1864, being at six seers in the latter year. Then a gradual fall to 12 seers in 1867, a rise to eight seers in 1868, and a fall to 1871, since when the price has not varied much from 10 seers, a rise of 50 per cent. since 1861. This rise of price was of course primarily due to the American War.

"To sum up, then, it may be said that prices of agricultural produce have risen by about 40 per cent. during the last 20 years as compared with the 20 preceding, and as compared with the 15 years before that by about 65 per cent.; that prices are now much less liable to fluctuate than they used to be, and that the comparatively high prices (disregarding the two last years of scarcity), which have now prevailed for many years are likely to continue if not to rise still higher. These conclusions argue favourably for the welfare of the agricultural classes, and therefore, it may be said, of the whole community."

Rates of interest.

The rates of interest vary with the security from 6 per cent. per annum to 37½ per cent., or even higher. Ordinary rates are 18 to 24 per cent. for unsecured loans, 18 per cent. on mortgage of land, and 12 per cent. on deposit of ornaments. As a class, the Meos pay the highest rates. Interest is often deducted in advance from the sum lent, and many money-lenders refuse to take less than six months' interest, however short the period be for which the money is required. Grain agreements are comparatively rare.

Chapter IV, C.

Prices, Weights and Measures, and Communications.

Price of land.

The figures of Table No. XXXII give the average values of land in rupees per acre shown in the margin for sale and mortgage; but the quality of land varies so enormously, and the value returned is so often fictitious, that but little reliance can be placed upon the figures.

Period.	Sale.	Mortgage.
1868-69 to 1873-74 ..	6—7	15—7
1874-75 to 1877-78 ..	14—8	15—4
1878-79 to 1881-82 ..	20—2	14—1

Sales of land.

Land is rarely sold, although it is constantly mortgaged. The tables compiled for the assessment reports showed that from 1857 to 1875, 26,062 acres, assessed at Rs. 22,795 had been sold for a total sum of Rs. 1,72,125. Of the area sold more than half was in Rewárí, and only 209 acres in Fírozpur. In all the *tahsìls* the rise in the value of land from 1857 to 1875 was very marked; the prices obtained in the period 1871 to 1875 in the various *tahsìls* were as follows:—

Tahsil.	Price per acre.	Price per rupee of *jama.*
	Rs. A. P.	Rs. A. P.
Fírozpur (area nominal only)	139 15 0	59 8 0
Palwal	21 8 0	23 5 0
Núh	19 4 0	20 3 0
Gurgaon	10 5 0	11 12 0
Rewarí	5 10 0	5 8 0

In Rewárí the small sale value of land has always been very marked; and Gurgáon most nearly resembles it in this respect. The profits to be obtained from these sandy *tahsìls* are too small to render land worth much as an investment.

Local weights and measures.

The ordinary land measure of the district, and that in which the settlement measurements were conducted, is the *bigha*, with its sub-divisions of *biswas* and *biswánsis*. Twenty *biswánsis* equal one *biswa*, and 20 *biswas* equal one *bigha*. The *bigha* is a square chain (*jarìb*); the chain being divided into twenty *gathas* of 8¼ English feet each. Thus the chain is 55 yards in length, and the *bigha* equals 3,025 square yards, that is, one hundred square poles, or ⅝ of an acre. In part of the district (chiefly in Gurgáon and Palwal) there is also a *kacha bigha*, to which the people frequently refer; it is measured thus; two steps (*kadam*) equal one *dag*; 20 *dags* make a chain, and the square chain is a *bigha*; the *dag* is about a yard-and-a-half, so that the chain may be reckoned at thirty yards and the *kacha bigha* at 900 square yards. But as is usual with these rough measures, the measure is far from accurately fixed; all depends upon the length of the *kadam*; and in general calculation the *kacha bigha* is reckoned at one-third the regular *bigha*. In Rewárí there is a *sùti jarìb* of 18 *gathas*, now falling into disuse; and in Fírozpur the old measure was a *jeori* or rope of 80 cubits (*hàths*). This last is the measure still used in Bhartpur. The ordinary measures of weight are the standard maund and its sub-divisions; but in Fírozpur reference is sometimes made to a *kacha* maund of 18 seers; and in the salt trade the usual measure is the *palla* or 3¾ maunds; five seers make one *dhari*. Mr. Wilson writes: "the salt traders take nine *dhari* as a "maund of moist salt, and eight-and-a-half *dhari* as a maund of dry salt."

Communications.

Rivers.

The figures in the margin show the communications of the district as they stood in 1882-83, while Table No. XLVI shows the distances from place to place, as authoritatively fixed for the purpose of calculating travelling allowance. Table No. XIX gives the area of land taken up by Government for communications in the district.

Communications	Miles.
Navigable rivers ..	30
Railways { R. M. P.	48
Railways { R. F. P.	14
Metalled roads ..	68
Unmetalled roads ..	741

The Jamná is navigable for country craft throughout its course along the eastern boundary of the district, and carries merchandize between Delhí and Agrá. The principal traffic on this river, as stated in the Panjáb Famine Report, 1879, is shown in Table No. XXV. The ferries and the distances between them are shown below, following the downward course of the river:—

River.	Stations.	Distance in miles measured along the river.	Remarks.
JAMNA.	Sheikpur	...	Ferry.
	Solra	6	Do.
	Bholra	2½	Do.
	Gurwári	5	Do.
	Sultánpur	4	Do.
	Bilochpur	3½	Do.
	Hasanpur	4	Do.
	Mahauli	3	Do.

Railways.

The Rájpútána-Málwa State Railway from Delhí to Ajmer runs through the district with stations at Gurgáon, Garhi Harsaru 6 miles, Jatauli (Pátaudi) 18½ miles, Khalilpur 25 miles, and Rewárí 32 miles, from Gurgáon. A branch line from Garhi Harsaru to Farrukhnagar, 7 miles, is maintained chiefly for the salt traffic from Sultánpur and the neighbourhood. The Fírozpur line leaves the Rájpútána-Málwa Railway at Rewárí, and has one station at Játúsána, 10½ miles, in this district; it is open as far as Hisár.

Roads and rest houses.

The Grand Trunk Road from Delhí to Agrá runs the entire length of the Palwal *tahsíl*; and there are metalled roads from Gurgáon to Delhí *viâ* the Kutub, and from Gurgáon for a few miles towards Sohná. Generally speaking, the unmetalled roads of the district are not good; in the Rewárí and Gurgáon *tahsíls* the country is so sandy that the roads are necessarily extremely heavy; in the country near Táorú the ravines are numerous, and in the rainy season the roads are sometimes impassable to wheeled carriage; in the low-lying part of Núh and the Fírozpur valley the roads are often under water, and occasionally it is impossible to journey from Fírozpur to Núh, except by keeping close to the base of the hills; in Palwal, and in the east of Fírozpur and Núh, the country is more naturally favourable to the construction of roads, and here the communications are fairly good, but it would be impossible to attempt a driving tour over any other part of the district. Really good roads from Gurgáon to Fírozpur *viâ* Sohná and Núh, and from Núh and Fírozpur *viâ* Púnáhánáá to Hodal, would confer a great benefit on the district, but they would not be easy either to make or to maintain. The other roads are not so important; the traffic

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Roads and rest houses.

between Rewárí and Núh is never likely to be of much importance; west of Rewárí good unmetalled roads are almost impossible, and the trade with the Native States beyond is mainly carried on by camels; the country too between Rewárí and Gurgáon is not favourable for road making, and as the railway follows this line of route, a good road is not absolutely needed. There are roads for wheeled carriage over the hills at Sohná and at Núh on the roads leading from those places to Táorú and Rewárí; and there is a good road through the pass west of Fírozpur leading to Tijára; and a very indifferent one through the pass east of Fírozpur leading to Bisru and the Bhartpur town of Pahárí: there is another pass on the Fírozpur-Púnáháná road at Khánpur-Ghati; the traffic by this route is considerable, but the road on both sides the pass is at present very heavy. Tracks over the hills, fit only for foot passengers or for ponies, are numerous. Perhaps at some future time it may be found possible to make a light railway, in continuation of the Hathras-Mathra Railway, running through Kosi, Hodal, and Palwal, with a branch to Núh; it would cost little to construct, and would probably be profitable financially, running, as it would, through a fertile and well-populated country, and opening up cheap communication between the Núh salt and the Fírozpur cotton, and the marts whither they now are exported by road. The following table shows the principal roads of the district together with the halting places on them, and the conveniences for travellers to be found at each. The roads from the Railway Station to Gurgáon, 2½ miles, Delhí to Mathra, and Gurgáon to Delhí, and the first two stages of that to Alwar (15 miles), are metalled; the other roads are unmetalled. A part of the Alwar road between Núh and Fírozpur is sometimes flooded for a short time after heavy rain.:—

Route.	Halting place.	Distance in miles.	Remarks.
Delhí to Mathrá.	Baghaula ...	...	Encamping-ground.
	Palwal ...	5	Metalled; encamping-ground, *sarai*, district rest-house with servant, *tahsíl*, *thána*, and post office.
	Bamnikhera ...	6	Metalled; encamping-ground, *sarai*, road bungalow.
	Hodal ...	12	Metalled; encamping-ground, *sarai*, district rest-house without servant, *thána*, and post office.
Gurgáon to Alwar.	Bhúndsí ...	8	Metalled; district rest-house without servant.
	Sohná ...	6½	Metalled; encamping-ground, *sarai*, district rest-house without servant, *thána*, and post office.
	Núh ...	12	Three miles metalled; encamping-ground, *sarai*, district rest-house, *tahsíl*, *thána*, and post office.
	Bhádas ...	11	Unmetalled; district rest-house.
	Fírozpur ...	11	Unmetalled; encamping-ground, *sarai*, and district rest-house, *tahsíl*, *thána*, and post office.
Palwal to Narnaul.	Palwal ...	...	*Tahsíl*, *thána*, post office, encamping-ground, *sarai*, and district rest-house without servant.
	Núh ...	19	Unmetalled; *tahsíl*, *thána*, post office, *sarai*, encamping-ground, and district rest-house.
	Táorú ...	10	Three miles metalled across a range of hills, police post, post office, encamping-ground, *sarai*, and district rest-house.
	Dháruhera ...	10	Unmetalled; police post, and *sarai*.
	Rewárí ...	11	Unmetalled; *dák* bungalow, encamping-ground, *sarai*, district rest-house, *tahsíl*, *thána*, and post office.
	Nimaut ...	16	Unmetalled; *sarai*.

Roads and rest-houses.

There are also unmetalled roads from Jatauli Railway Station *vid* Bahora (metalled as far as Bahorá, 6 miles), Táorú, Sohná, and Palwal to Gurwári Ferry, 52 miles; Delhí to Rewárí and Jaipur *vid* Sháhjahánpur, 53 miles; Rewárí to Jhajjar, 15 miles; Rewárí to Kot Kásim, 10 miles; and Firozpur to Hodal, 30 miles, on which there are no fixed halting-places. A good unmetalled road runs along the left bank of the Agrá canal, which is bridged at the following places:—Mandkaul, canal bungalow; Aláwalpur, 4 miles; Kithwári, 1 mile; Chhajjúnagar, 2¼ miles, canal bungalow; Rasúlpur, 2¼ miles; Bata 2¾ miles, canal bungalow; Bela, 2¼ miles; Ghásera, 2½ miles, canal bungalow; Khánbi, 2¾ miles; Bhidúki, 2½ miles; Bánswa, 2½ miles, canal bungalow.

There are also canal bungalows at Siha, Mánpur, and Púnáháná on the distributaries, and district rest-houses at Sailáni, Hátín and Kalinger, and dák bungalows at Gurgáon and Rewárí. The dák bungalows are completely furnished and provided with servants. The police and road bungalows and district rest-houses have furniture, crockery and cooking utensils, but as a rule no servants. The canal bungalows have furniture only. A camel carriage dák plies along the Delhí-Mathra road, and a bullock carriage between Gurgáon Railway Station and Sohná.

Post Offices.

There are imperial post offices at Hodal, Hasanpur, Firozpur, Nagina, Púnáháná, Palwal, Núh, Hátín, Rasúlpur, Táorú, Sohná Bádsháhpur, Pátaudi, Farrukhnagar, Rewárí, Jàtusána, Khol, Sháhjahánpur, Garhi Harsaru, and Gurgáon. There are no district post offices. All the imperial post offices above-mentioned are money-order offices as well as savings banks.

Telegraph.

A line of telegraph runs along the whole length of the railway, with a telegraph office at each station, and a branch line to connect Gurgáon with the Railway Station is soon to be constructed.