CHAPTER IV.

PRODUCTION AND DISTRIBUTION.

Chapter IV, A.

Agriculture.

SECTION A.—AGRICULTURE.

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 and IIIA and B. 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 Section D. The measurements of the recent Settlement give the following figures for area of cultivated and irrigated soils:—

Tahsil.	Area in Acres.									
	Revenue free.	Unculturable.	Culturable.	Fallow.	Cultivated.					Total area.
					Canal lands.	Well-lands.	Flooded lands.	Rain-lands.	Total.	
Gohána ...	430	13,901	30,191	1,006	63,342	506	25	105,649	169,525	215,056
Rohtak ...	2,797	19,231	55,268	4,124	11,531	470	...	285,043	297,044	378,464
Sámpla ...	1,285	16,035	29,536	341	22,002	2,371	911	189,297	214,581	261,778
Jhajjar ...	10,991	17,387	48,341	8,262	...	18,988	8,604	185,676	213,268	298,249
Total ...	15,509	66,554	163,336	13,733	96,875	22,335	9,540	765,665	894,415	1,153,547

Soils.

The soils of the district have already been described in Chapter I (pages 7, 8). In years of good rain there is little to choose between *dákar*, *matiyár* and *rausli*; while *bhúr* has this advantage, that it will often grow a crop with rainfall, that is quite insufficient for any other class of soil. The area of each soil according to the recent Settlement survey is—

Soil.	*Acres.*	*Percentage.*
Manured	32,054	4
Dákar	21,051	2
Matiyár	58,677	7
Rausli	671,901	75
Bhúr	110,732	12
Total	894,415	100

But the manured area was under-estimated. More than two-thirds of the *bhúr* area is situated in the Jhajjar tahsíl.

Table No. XXII shows the number of cattle, carts, and ploughs in each *tahsíl* of the district as returned in 1878-79.

Agricultural implements and appliances.

The implements of agriculture are few and simple. Some few are fashioned by the agriculturists themselves, but most are made and repaired by the blacksmith and carpenter, in return for their

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customary fees and without charge; the supplying and mending of the implements cost these village servants about Rs. 6 each per landlord a year. The following list comprises all those in common use:—

Agricultural implements and appliances.

Hal,—plough.	*Kulhárí*,—hatchet.
Sohága,—clod crusher.	*Kasi*,—large spud.
Jándra,—drag-rake.	*Kharpá*.—grass-spud.
Jeli,—fork.	*Kasolá*,—large mattock.
Daráni,—sickle.	*Kolálí*,—smaller do.
Gandasi,—axe to cut thorns.	*Gádí*,—cart.
Gandasa,—fodder chopper.	*Kolhú*,—sugar mill.

Plough.

The chief parts of the plough are the yoke,—*júa*, the pole from the yoke to the plough,—*halás*, the share—*kas* or *pháli*, the wood below the share,—*panihárí*, the hollow bamboo drill with a cup at its head attached to the side of the plough in order to drop the seed,—*órná*; and the oxwhip,—*sántá*. The sugar mill is made up of the following principal pieces—the *kolhú*, or wooden stump, in the top of which the cup for crushing the cane is; the *lát* or crusher revolving within the cup; the horizontal beam from the top of this, which joins the far end of the other beam to which the oxen are yoked, and whose base revolves round the side of the *kolhú*,—the former called *mánick mal*, and the latter *pát*. The method pursued for expressing the cane juice has been correctly described by Mr. Powell in his "Punjab Products," and needs no further account here. There are about 1,000 sugar mills in the district, of which half are in the Gohána *tahsíl*; as a rule the *zamindárs* manufacture *gúr* only, but refined sugar also is made by them in some villages, and that of Bidhlán, Sisánah, Busánah, Mundlánah, Mahmúdpur, and Madínah has a considerable local reputation. Many of the carts of the countryside are very fine ones, capable of carrying a weight of 40 or 45 maunds and drawn by five or six oxen; the carts used for agriculture exclusively are smaller, and drawn by two oxen. There are between twelve and thirteen thousand carts in the district, of which two-thirds are large ones and ply in the carrying trade. Though the receipts of the *zamindárs* from this source have certainly fallen off since the railways opened, some two lakhs of rupees a year are still made by carrying; few carts comparatively are owned in Jhajjar. The names of the important pieces which make up a cart are as follows: wheels *(pahiya)* made of *kíkar*; axle *(dhúrah)*: the solid bars outside the wheels which keep them close to the body of the cart, *bánk*; the main pieces which run from end to end, which are made of *sál*, and on which the upper work of the cart rests, *phar*; the side netting of bamboo and cord, *khúntá*; the cross sticks, which support the cart in front when standing, *dahí*, and the log of wood, which similarly holds it up behind, *olárwa*. A large cart *(gádi* or *ladhá)* costs Rs. 75. The furnishings of a well are as follows: the wheel, *charkhí*; the wood-work by which the wheel is supported, *dhánah*; the rope, *lao*; the leathern bucket, generally made of buffalo skin, *charás*; and the iron ring, round which the bucket hangs, *mándal*. Besides the above implements there may be mentioned as necessary for the work of agriculture the threshing ground, *gáhíta*, with its upright pole *(mend)*, round which the oxen treading out the grain are driven; and the *chhaj* or winnowing tray; the platforms made of earth or supported on upright poles *(tér* and *dámchah)*, which are needed for the watcher of the

Sugar mill.

Carts.

Wells.

Miscellaneous.

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Agricultural implements and appliances: miscellaneous.

crops to protect them from the birds, and the *gopyiá* or *sling* which he uses. Not a few of the implements are clumsy, but, in some cases, at least, with cause. The cart must be heavy and strong, to stand the joltings of the ruts of village roads; the plough must be light, and not penetrate too deeply at the time of sowing, for the rainfall is not always sufficient to penetrate far into the soil, and a damp bed of not a few inches deep is needed below the seed, for its roots to shoot down into. To have a heavy plough for the preparation of the fields and a light one for sowing is, of course, quite beyond the ideas of a Játa cultivator. Winnowing in the Indian fashion, by pouring the grain from a basket held by a man standing on a stool, and allowing the wind to bear away the chaff, is still at the present day the common practice in parts of Ireland. The sugar-mills are no doubt unnecessarily clumsy, and both the quantity and quality of the juice expressed are affected by the practice of cutting the cane into small pieces. One or two iron mills introduced experimentally did not fine much favour; but a second attempt, if made, would perhaps be more successful.

The seasons. Rainfall.

The total annual fall of rain and the manner in which it is distributed throughout the year are shown in Tables III, IIIA, IIIB.

The average rainfall is 19½ inches, which is distributed thus according to months in each tahsíl:—

	Gohána.	*Rohtak.*	*Sámpla.*	*Jhajjar.*	*Average.*
January ...	·5	·3	·4	·4	·4
February ...	·5	·5	·3	·4	·4
March ...	·7	·7	·4	·4	·5
April ...	·4	·3	·3	·3	·3
May ...	·9	·7	·6	·6	·7
June ...	2·3	2·0	2·0	2·0	2·1
July ...	5·6	6·7	6·6	6·7	6·4
August ...	4·1	3·7	4·0	3·6	3·9
September ...	4·1	3·8	3·6	3·8	3·9
October ...	0·3	0·4	0·4	0·3	0·3
November ...	0·0	0·0	0·0	0·0	0·0
December ...	0·7	0·5	0·4	0·6	0·5
	20·1	19·6	19·0	19·1	19·5

The rainfall is greater in the northern *tahsíl* than in the others, as would be expected, though curiously enough, the Gohána *tahsíl* shows the lowest figure in three out of the five years of scantiest rain since 1860-61. For the six years from 1850-51 to 1855-56, the average fall, according to the returns of the North-Western Provinces Revenue Reports, was 22·1 inches, but the record was perhaps not so carefully kept then as now. It will be seen that the fall of July is nearly double that of any other month; that the fall in August and September is about equal; and that the rains cease early, the average fall in October being only ⅓ inch. The rainfall may be divided off into the following periods:—

December—February	1·4
March—May	1·5
June and July	8·5
August and September	7·8
October and November	·3
Total ...	19·5

Roughly speaking, thirteen inches go to the sowing of the autumn

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The seasons. Rainfall.

crops, and five inches to the sowing of the spring. November is the only month, which shows no rainfall at all. The winter rains are scanty; about an inch for the gram crop, and two inches (one more) for the wheat and barley. The early summer rains enable cotton to spring up well, and the *bájra* and fodder to be sown, and they are especially beneficial in replenishing or preventing the further exhaustion of the stores of water in the tanks, which begin to fail rapidly from the middle of May forward; but the really important rain is that of July. Thus in 1866-67, and again in 1870-71, the fall of the whole year was as poor as in the famine seasons and in the drought of 1877-78, but such rain as did come fell in June and July, and no famine or serious drought took place. The lowest recorded rainfalls of the district are 9 inches in 1860-61, 12·6 in 1866-67, 11·2 inches in 1868-69, and 13·2 inches in 1870-71; the highest occurred in 1862-63, 1863-64, 1872-73 and 1875-76, when the gauges registered 27·2, 28·8, 26·7, and 31·1. The lowest record in any *tahsíl* is 4·5 inches at Gohána in (1860-61), and the highest 37·5 at Sámpla in 1875-76, which was the heaviest fall by far ever known in the district. The people consider the rain good when it moistens the soil to a depth of 2½ feet from the surface. The terms for the various degrees of rain are as follows:—

Dongra.—Scattered drops.
Chadar bhí,—sufficient to damp their clothes.
Khádwdsi,—a furrow full.
Kiárí bhar,—a field full.
Dolak or sáká tór,—sufficient to break the field's boundaries.
Mósal dhár,—a heavy downpour.
Desa bhara,—general rain.

After the falls of rain, and especially after the last fall in the autumn, extraordinarily heavy dews set in at nights; these are almost as beneficial to the crops as the rains themselves.

Agricultural calendar.

The round of the common task of agricultural operations does not call for more than a brief record. The cotton and sugarcane are planted in April and May, and the indigo and early fodder crops are sown while yet the fields are being cleared of the wheat and barley; rain with hail in these two months may do great harm. In June the *bájra* and early *joár*, the later cotton and *sánthí* rice are sown, and the cotton and sugarcane fields are cleaned; for all these crops early rain in June is most beneficial. In July and August all the *joár* goes into the ground and the pulses, and the fields have to be constantly cleaned; moderate rain at intervals throughout the two months is what the agriculturist prays for; too heavy rain is apt to injure the crops and cattle both. In September the early *bájra* is cut, and the gram begins to be sown; on the final rains of this month depend the yield of grain of the autumn crops, and the extent of the spring crops. In October rain is not needed; the later *bájra*, and the *joár* are cut, and the spring sowings of wheat and barley commence; in November and December the autumn crop is threshed out and stored, the picking of the cotton begins, and the last fields possible are put down with the spring crops: rain in December is good for the gram. In January the sugarcane ripens, and is cut and pressed, and the cotton is cut down; some rain is desirable in this month and in February for the wheat and barley.

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In March the gram is cut, and after this month rain is no longer needed; if it comes, it only does harm. Such, in brief, is the calendar of the year's agricultural work.

Irrigation, &c.

The cultivated lands are classified as follows in the Settlement papers, with respect to artificial irrigation and the rainfall :—

	Acres.	Percentage.
(1).—Canal irrigated	96,778	11
(2).—Canal and well irrigated	5	...
(3).—Canal and flood irrigated	92	...
(4).—Well irrigated	20,595	2
(5).—Well and flood irrigated	1,740	...
(6).—Flood irrigated	9,540	1
(7).—Rain land	765,665	86
Total ...	894,415	100

Two-thirds of the canal-irrigated area are in Gohána; about six-sevenths of the well lands, nine-tenths of the flooded lands, and all the well and flooded lands are in Jhajjar; items (2) and (3) in the above list are due to an unnecessary refinement of classification. The system of cultivation under each of the above set of conditions may now be noticed briefly.

Canal lands.

Canal irrigation is effected almost entirely by flow *(tór)*, only 2,496 acres in the whole district require the water to be lifted to them *(dál)*. At the Regular Settlement the area irrigated by lift bore a considerable proportion to that irrigated by flow; but the silting of the canal, and the consequent constant heightening of its banks, have now raised the water above the level of the country at almost all points. Whether this is an unmixed advantage is doubtful. In many villages the irrigated area has been allowed to increase out of all proportion to the necessities of the estate. The new system of owners' rates will, it is hoped, effect some change for the better here. The water leaves the canal through masonry outlets called *morí*: the larger water-courses are named *kháds* in Gohána, and *dhánah* in Rohtak and Sámpla, and the lesser *phánké*; *rajbahas* are the main distributaries. There is always some trouble in effecting the work of clearance, as the Játs will not, as a rule, do it themselves, although they do clean out their water-courses, but send their menials to do the work.

Saline efflorescence.

Allusion has already been made to the development of saline efflorescence caused by the canals. The origin of this pest has been fully discussed in the papers of the Aligarh Conference. The villages above Mundiánah, in the north-east corner of Gohána, and the estate of Mu'azzamnagar above Kharkhándah in Sámpla, which suffer most from actual efflorescence, seem to have been attacked as forming the highest ground near; in none of these cases is there any serious check of natural drainage, nor are the lands liable to be swamped, as they are in Chhaterá, Siwánkah and Mahmúdpúr, along the main line of the Rohtak canal, and in which this cause alone is the origin of the evil. In Mirzápúr, and Chhichránah on the Gohána border, and in Sasrolí in Rohtak, the salt is probably developed by soakage from the canal, whose bed is there high above the level of the country. In no other canal villages is the efflorescence as yet badly developed in the cultivated

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Saline efflorescence.

lands; but it is developing fast in Bidhlán, Séhri and Khándah, in Sámpla. Four small estates have had a five years' Settlement made with them on account of the ravages committed by this pest. It is to hoped, however, that in the Gohána estates, at least the area affected will gradually diminish as the good effects of the new alignment of the canal are felt. It may be noticed here that the scale of charges which now prevails for the use of water—occupiers' rates—was fixed in 1866, and is more than double the old scale which prevailed under the contract system at last Settlement. The present rates are as follows :—

Class.	Crop.	Rate per acre.					
		Flow.			Lift.		
		Rs.	A.	P.	Rs.	A.	P.
I.	Sugarcane and gardens ...	5	0	0	3	5	4
II.	Rice, tobacco, vegetables, and water nuts ...	3	0	0	2	0	0
III.	Indigo, cotton and all spring crops ...	2	4	0	1	8	0
IV.	All autumn crops not given above ...	1	10	0	1	0	0
V.	A single watering before ploughing to fallow lands ...	1	0	0	0	10	0

* The rate for gardens is per annum, the others are per crop : a single watering is called by the people *palewá* or *paleo*.

Well lands.

There are 2,088 irrigation wells in use in the district, and 639 out of use. Of the wells in work, 1,511 are in the Jhajjar *tahsíl* and 340 in Sámpla; 1,793 are lined with masonry, and 275 are simply dug in the earth. A very great number of the wells have been sunk since 1860; and an area of 4,300 acres attached to 372 wells is at present exempted from assessment at well rates under the cover of protective leases. They are all worked by the well-known system of the bucket and rope (*láo* and *charas*); no Persian wheels are found in the district, although they could be certainly used in the flooded tracts. As most of the irrigation wells are situated where water is near the surface, the average depth to the water in them throughout the district is only 27 feet, as compared with 52 feet, or nearly double, in drinking wells. There are a few wells fitted with four and three buckets, but these are rare; nearly one-fourth of the wells have two buckets, the rest are worked by a single one. The unlined wells are generally of larger circumference than the masonry ones, in order to prevent the water spilling on their sides. They are of three kinds, and nearly all in the Jhajjar *tahsíl*. The first kind consists of those which are strengthened by a wooden frame-work down below, as well as by wattling of *farásh* boughs : these are called *kothawálás*, and will last 15—20 years; they cost Rs. 60—70. The second kind have wattling only, and are termed *jhárwálás*; they cost Rs. 25—30, and last ten years. The third class have no protective lining of any kind, and are called *galawálás*; they are few in number, cost Rs. 15 each to excavate, and last, if there is no extraordinary rainfall, for five years. A large number of unlined wells used to exist in the Gohána *tahsíl* (and no doubt in Sámpla also), as is shown by the returns of the

Unlined wells.

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Unlined wells.

first Revenue Survey in 1825—30; but as the canal irrigation extended these fell in, or else fell out of use. The water in wells affected by canal irrigation has risen enormously since the canal was restored; and there is found in some wells of the low-lying canal villages 50—60 feet of water, showing how far the natural level was once below what it now has artificially become. In some villages which lie along the course of the old Kashóoti *naddi* in Jhajjar, the depth of the water from the surface has become greater since the floods ceased to come down. The masonry wells in the south-east corner of Jhajjar are made of stone, procured from the little hills on that side; elsewhere they are lined with bricks; in the villages for miles round Mohan Bári, the materials for lining wells have been dug out of the old site there. The stone wells of Koslí are remarkable for their very small circumference, and their water for its qualities; the people call it nectar (*amrat ká páni*). The wells in use, and out of use, are classified as follows, according to the quality of their contents:—

Water of wells.

				No. of wells.
Sweet-water	...	...	...	1,319
Malmala „	...	...	...	546
Matwala „	...	...	...	39
Bitter „ (*shor khára*)		...	...	604
Salt water (*shor kallar*)		...	...	229
	Total		...	2,727

Nearly all the wells out of use belong of course to the last two classes; salt water wells include those of the Agris for the manufacture of salt. The sweet wells are found principally in the naturally flooded tracts, which thus have a great advantage over the other portions of the district. Few of the wells are naturally sweet; they are made so and kept so by the tanks and floods of the streams. The land irrigated by the bitter wells has to be changed every year or two years, in order to avoid the excessive development of *reh* efflorescence; this system of change is called *sál-palat*. Salt efflorescence is present in considerable quantities in the Rájpút estates in the south-east corner of Jhajjar, and again in a few villages above Gúriání and round Bhúrawás. The irrigated area per well throughout the district is 10 acres, and in the Jhajjar *tahsíl* 12; about two acres more of irrigable land are attached to each well; the area irrigated by each wheel is about 8 acres. The special system, which prevails among the Ahírs, of each sharer working the well year by year in turn, has been noticed in Chapter III, Section C, page 67. About 5,000 pairs of oxen are required to equip the wells of the district fully, and only about 125 pair of this number were found short at the time of Settlement measurements. The cost of masonry wells for irrigation varies from Rs. 400 in the naturally flooded circles to more than twice as much in the rain-land tracts of the northern *tahsíls*; the average cost of a complete well is about Rs. 600. In the Sahibi depressions, *dhenklis*, or levers with pots attached to them, are used by village menials to water little plots of land; the *zamindárs* themselves do not use them. There are 1,173 drinking wells (*panghat ká kúá*), in the district, of which 1,115 are lined with masonry, and 946 sweet; they are nearly always sunk on the edge of tanks, and their water ceases to be sweet as soon as these dry up; but except in some Jhajjar

Drinking wells.

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villages and a few on the west border of Rohtak, the people are not, as a rule, badly off for drinking water. Curiously enough, nothing will induce them to drink the canal water, which is really far purer than that in the wells of the canal villages. There are about 500 village tanks in each of the four *tahsíls*, but those in Jhajjar are poor and inferior, except along the northern border.

Cultivation in the flood depressions.

There is little to be added to the account of cultivation in the naturally flooded tracts, and round the Najafgarh *jhíl*, written in 1838 by Lieutenant (Sir H.) Durand :—"The villages on the *jhíl* are dependent upon its supply for the irrigation of some of their most valuable lands, *viz.*, those bordering the *jhíl*. Experience has acquainted them with the ordinary height of the water, and thus enables them by careful attention to the levels selected for the purpose, to plant sugarcane in February and March, with every prospect of a rich crop in December. In the month of November the main line and both branches (those to Bupáníah and Bahádurgarh) are thus fringed with fields of sugarcane. Such ground as is favourably situated with reference to the *jhíl*, but not occupied by the sugarcane, is that first prepared for the *rabi*. The water expended in its tillage, and by evaporations, lays bare a certain portion more, which is immediately ploughed up and sown. For the purposes of facilitating the irrigation of the sugarcane, and of the lands first sown with wheat and grain, short cuts are made from the lower levels as far as the sugarcane levels ; beyond this, cuts hardly ever extend. The higher and more retired land produces the usual *bárání* crops." These cuts are only dug, of course, where the water remains permanently all the year round; they are most commonly made use of in Kót Kalál, Jehángírpúr and Súrah. To meet the peculiarities of cultivation in the depressions, the fields are formed into long strips (*pattis*) running down from the higher lands into the water; thus every field benefits or suffers equally from the rise and fall of the floods. The water is lifted from the cuts and thrown into the fields themselves or into ducts to the fields by two or more pairs of baskets (*chháj*). The wells are situated above the level of the floods, along the edges of the depression in Jhajjar : in Bupáníah only do they extend right across it. The crops of the depressions are often very luxuriant, and tremendous tales are told of the yield of certain favourable years, especially in Yakúbpúr. An area of 1,289 acres remains permanently under water all the year round; usually the floods dry rapidly elsewhere, and enable a large spring crop to be sown. In consequence it was not thought necessary to put any of the flooded villages under a fluctuating assessment, as has been done in a few cases in Delhi and Gurgáon. It is true that in years of unusual rainfall, such as 1875, some thousands of acres remain submerged from 6-8 months together, and in that year some of the villages were entirely cut off from all connection with others for whole weeks; but in such cases the sugarcane crop repays twice over the loss caused. The water in the depression is held up by the Bádlí *band* constructed by Nawáb Faiz Mahammad Khán; the *band* is an earthwork of some dimensions with four small masonry sluices in the middle, which allow the floods to pass on.

Rain-lands.

Irrigation from tanks is never practised: the people have religious

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Rain-lands.

prejudices against this. Shallow cuts (*ágam*) are made from the jungle lands to the fields, to guide the rain-water to the latter, and low-lying plots are highly prized. "What can the enemy do to the man whose friend is the magistrate, or whose field is in low ground." The unirrigated lands of the district form 86 per cent. of the cultivated area; the importance therefore of a full and timely rainfall for the Harriána country may be seen at a glance. When the rain is satisfactory, the soil produces most luxuriant crops, and sometimes most astounding ones; the people talk of a single acre of *joár* producing a yield of 40 to 60 maunds in some years. The autumn crops on rain-lands are *joár* and *bájra*, with pulses sown below them; the spring harvest consists of gram and a little *sarson*, and in years of good winter rains, of some extent of barley.

Ploughings, manure, fallows, rotation.

The soil, though freely cropped, shows no signs of general exhaustion, call it old and worn out though the people may: the famines cause enforced fallows at intervals, and the crops of the following season are always more luxuriant than usual, if the rainfall is sufficient. No such system as that mentioned by Mr. Channing in his Gurgáon Report, of exchanging blocks of lands periodically (*pánáh palat*), exists in any village of the Rohtak district. The number of ploughings which the soil undergoes are as follows for each crop:—Pulses and poor grains 1 or 2, gram 2 or 3, *joár*, *bájra*, rice 2 or 4, cotton 4 or 6, wheat and barley 5 or 8 sugarcane 5 or 10. The ploughing is done very effectually, the whole soil being finely pulverised and no clods left in it. Manure is not used except in irrigated lands; sugarcane requires an immense deal, and rice must have manure also; most of the rest goes to the wheat and cotton. Canal lands receive more manure than well-lands, the object being to counteract the greater coldness of the canal water. Fallows proper are not practised: the pressure of population and the division of property are perhaps too great to allow this. For rain-land cultivation the agriculturist generally sets aside over two-thirds of his lands for the autumn crop, and somewhat less than one-third for the spring, and the land gets rest till the season for which it is kept comes round again: if there is heavy summer rain, the whole area will perhaps be put under the autumn crop, and in that case no spring crop is taken at all. These arrangements are due to the nature of the seasons, rather than to any care for the soil. On lands irrigated by wells and canals a crop is taken every harvest, as far as possible; the floods of the natural streams usually prevent any autumn crop, except sugarcane, being taken on the lands affected by them. Rotation of crops is acknowledged and followed, in a very imperfect way only, and for the sake of the crop rather than the soil; after cotton, gram and barley are generally sown; after rice and indigo, gram; after *joár* and *bájra*, wheat and *gaochni* on irrigated lands, and gram on unirrigated; before and after sugarcane a grain crop is usually taken.

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 (pages 249-250):—The following figures show the percentage of cultivated area, which is manured—

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Ploughings, manure, fallows, rotation.

	Constantly manured.	Occasionally manured.	Not manured.	Total.	Percentage of previous column, which bears two or more crops annually.
Irrigated land ...	11	56	33·	100	Irrigated 8·5
Unirrigated land ...	15	23	99·62	100	Unirrigated 9
Total ...	2	7	91·	100	

The average weight of manure given to the acre per annum, on land constantly manured, is 600 maunds. And on land occasionally manured, 450 maunds, as a rule, every third year. The following Statement shows the usual course of cropping :—

Serial No.	Description of soil.	Rotation of crops.					
		Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.
1	Chahi ...	Joár, Bájra	Barley, Wheat.	Joár, Bájra	Barley, Wheat	Joár, Bájra	Barley, Wheat
2	Do. ...	Cotton ...	.....	Bájra Mung, Másh.	Ditto ...	Ditto ...	Ditto
3	Canal ...	Joár ...	Ditto ...	Joár ...	Barley, Wheat Gram.	Joár ...	Ditto
4	Do. ...	Sugarcane	.....	Sugarcane ...	.....	.....	Ditto
5	Báráni manured	Joár ...	Barley, Sarson.	Mung, Másh and Joár.	Barley, Wheat	Joár, Bájra.	Gram, Sarson.
6	Do do ...	Cotton ..	Gram ...	Ditto ...	Ditto ...	Ditto ...	Ditto
7	Do. not manured	Joár, Bájra	.....	Ditto ...	.....	Ditto ...	Ditto
8	Do. do. ...	.....	* Not dofasli save in good rainy seasons.				
9	Dhari ...	Cotton ...	.....	Joár, Bájra	.....	.....	Barley, Wheat
10	Do. ...	Sugarcane	.....	.....	Barley, Wheat	Joár, Másh.	.....

Unmanured *báráni* lands, save in good rainy seasons, yield one crop only, and therefore have much rest. As a rule, irrigated land receives no rest, save in the case of cotton and sugarcane, when during the *rabi* the land is at rest. When land has given crops each harvest for three years consecutively, it is allowed to remain *ekfasli* for a year or two.

Average holdings. Distribution of crops.

The area which each cultivator holds in canal-circles is 5 acres, in well circles 9 acres, and in purely rain-land tracts, 7½ acres. The distribution of the crops of each cultivator over these holdings may be put with approximate correctness as follows :—

Rain-land.	Acres.	*Well.*	Acres.	*Canal.*	Acres.
Joár ...	... 4	Joár, Bajra	... 3½	Joár	... 1½
Bájra ...	... 2	Cotton ...	... 1	Cotton	... 1
Gram ...	... 1½	Barley ...	... 4½	Sugarcane	.. 0½
				Wheat	... 2
Total	... 7½	Total	... 9	Total	... 5

No one, except a fairly well-to-do man, can afford to cultivate sugarcane; in the majority of cases, therefore, another half-acre would be found under cotton instead. The number of full-grown male cultivators who go to plough is little less than three (2·82); the area per plough throughout the district is 20 acres, and comprises one holding and a third; the area per plough is lowest in Sámpla—17 acres, and highest in Rohtak—23 acres.

* *Dofasli* means that which bears two crops, and *ekfasli* that which bears one crop per annum.

Chapter IV, A.

Agriculture.

Principal Staples.

Crop.	1880-81.	1881-82.
Kangni	207	19
Mattar	230	13
Máh (Urd)	9,599	1,080
Múng	12,820	2,570
Masúr	200	51
Coriander	24	11
Chillies	72	55
Other drugs and spices ...	103	269
Mustard	5,755	1,347
Til	1,926	382
Tára Mira	55	4
Hemp	878	467
Kasumbh	170	12
Other crops	34,640	30,264

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 in the margin. The figures given below show the areas under the several crops as ascertained at the recent Settlement Survey :—

Harvest.	Crop.		Area in acres.
	Vernacular Name.	English Name.	
I.—Autumn ...	Joár	Great millet	371,826
	Bájra	Spiked do.	260,609
	Moth	Pulse	16,278
	Múng	"	1,421
	Máh or Urd... ...	"	891
	Gwár	"	12,099
	Dhán	Rice	4,387
	Bári or Bun	Cotton	44,136
	Ikh	Sugarcane	14,908
	Nil	Indigo	1,387
		Total ...	721,856
II.—Spring ...	Gehún	Wheat	36,845
	Jau	Barley	19,949
	Channá	Gram	107,419
	Gochní	Gram and wheat ...	17,318
	Gojra	Barley and wheat ...	661
	Bejar	Barley and gram ...	1,410
	Tambáku	Tobacco	170
	Sarson	Rape seed	1,473
	Taráméri	Vegetables	645
		Total ...	184,889
		Grand Total ...	906,745

Besides the above crops, an area of 2,243 acres, or 0·24 per cent. of that occupied by them was found under some 20 kinds of miscellaneous produce, which need not be detailed here, one-fourth being under fodder. The above area includes revenue-paying lands only, and the total is made up by the lands under double crops, which, however, have been returned at far below their real mark. The cultivation of opium, it may be noticed, is not permitted in the Hissár division. The large area sown with wheat and gram mixed is peculiar, perhaps, as is the small amount of land under rape seed and pulses,—the latter, however, are grown largely at the foot of *bájra* and *joár*. The gram area is much below the true one; this is chiefly due to incorrect record at Settlement measurements, owing to a misunderstanding of the orders issued on the subject; but little gram is grown in Jhajjar. On the other hand, nearly all the barley is cultivated round the wells of that *tahsíl* and the greater

Chapter IV, A.

Agriculture.

Principal staples.

portion of the *máth* and *bájra* (*Jákhar ká des, Jahán moth bájra hamesh*): little cotton, however, is found there. The pulse, *gwár*, is grown principally for fodder, and is but little eaten. Indigo cultivation is also below the real mark; it is grown for seed only. The sugarcane area is considerable—half of it is in the Gohána *tahsíl*, where also nearly all the rice is found in the bed of the Nai *naddi*. The cotton area is equally divided among the three northern *tahsíls* It is the only crop that ever gives a double yield; that of the second year is said to be better than that of the first, but all the same it is not usual to leave the plants in the ground for a second season. Tobacco and vegetables occupy in our returns a less area than they do in reality; the latter are grown almost entirely at the Jhajjar wells, and chiefly by Abírs and menials; the Játs seem to consider the cultivation of vegetables derogatory to them. Indigo did not exist in the district in 1838; the sugarcane area was under 2,000 acres, and there was little wheat, compared with what there now is. The proportion of the chief crops to the whole cultivated area is much as follows: Millets, 69 per cent. (high); gram, 12 per cent. (low); wheat and better spring grain crops, 8 per cent.; cotton, 5 per cent.; pulses, 5 per cent.; and sugarcane, 2 per cent.

Cultivation of crops.

As regards the soils of the district, with the exception of *bájra*, which is generally grown in the lightest soils, and rice, which is always grown on clay, the crops are sown in any and all indifferently. The sugarcane, indigo, and rice are always irrigated, the wheat and barley usually so, the second, third from the canal only, (roughly speaking), the first and fourth by the Sáhibi floods also, and the barley from the Jhajjar wells. In years of good rain, a large area will be found under cotton; tobacco is grown at the Gohána wells only. Sugarcane, indigo, and cotton will never give even a moderate yield, unless fair rain falls on the crop; water applied to the roots alone does not suffice for them. Seed is taken by the less thrifty cultivators from the traders on the terms of paying back half as much again at harvest time: the seed is often very bad and old. One-fifth more than elsewhere is usually needed in the lighter soils. There are not many varieties (of seed) in the Rohtak district, —as a rule, one kind is well known, and generally used. The wheat is of two kinds, red and white, the latter the more costly; the rice is of three species,—*Sunipati*, which is white and fine; *hansráj*, which is white and coarse; and *sánthi*, which is red, small and coarse, but far the most commonly sown. *Joár*, which hangs its head, is called *lámpa*: it is the best and sweetest kind; *jogiyá* is the red drooping *joár*; and *dholí*, white *joár* which grows with head erect. The *bájra*, commonly sown on *bhúr* soil is the *bágri*—other kinds are the *chindausí* and *dezwál*, the last of which is marked by the smallness of the ears. Of *máh* three varieties are commonly used: the black, green and *úrdi*, which is a small black species that ripens very rapidly; *gwár* is called *arak* and *deswál*—the former is poor and grows here and there in a wild state, when it is called *ráná*. A great deal of the *joár* and *bájra* is grown for fodder only; at measurements sufficient attention was not paid to the distinction between fodder and grain crops. Nearly the whole

Seed.

Fodder crops.

of the *guár*, $\frac{1}{8}$ to $\frac{1}{4}$ of the *joár* and *bájra* crops, according to the season, and $\frac{1}{10}$ to $\frac{1}{12}$ of the gram crop, is either cut before it is ripe, or else is actually sown and grown as fodder. Green food in the shape of young wheat or barley is rarely given to the cattle, and turnips are nowhere grown for their use.

Well-known crops.

All the crops of the district are of good quality, but none except the Kasendi tobacco has a special reputation outside. Locally famous is the red wheat of Silánah (Sámpla), Kulási and Láth, and the white wheat of Máhrah and the villages round Jauli in Gohána. Barley is best in Koslí; rice in Mahmúdpúr and Gohána; *bajrá* in Nauganwah and Bir Birkatábád; *másh* in Daryápúr, and *múng* in Dighal. The cotton of the Sámpla villages, which are naturally flooded, and of the estates round Barodah in Gohána, is the best of its kind; and sugarcane of the first class is grown in Buenánah, Sarsádh, Mahmúdpúr, Rohnah, Gopálpur and Sisánah, and among the naturally flooded villages at Bahádurgarh, Súrah and Jahángírpur.

Diseases of crops.

The evils and diseases which attack the crops, and spoil their yield are many; but this again is unfortunately a subject on which there is little exact information available, though much that is general. A large number of ills caused by worms and caterpillars, and which it would need much study to identify, are put forward by the people. The rust (*kúngí*) on wheat and barley is well known, and a similar disease attacks other crops. Frost is the enemy of sugarcane, cotton, and gram; hail often damages the wheat and barley just as it is ripening; strong winds hurt the spring produce, and hot winds the autumn. Deer, hedge-hogs, and above all, monkeys, as regards the sugarcane, are a perpetual source of trouble and mischief to the people; and the whole air seems to have become alive with birds at the time when the crop ripens. Swarms of locusts are not uncommon, but they either kindly pass on south, or if they stay, settle on the sand-hills and deposit their eggs there, where it is comparatively easy to destroy them.

Average yield. Production and consumption of food grains.

Mr. Fanshawe states that the yield is pretty constant throughout the district for each kind of soil, and gives the general estimates shown in the margin.

Grain.	Seers per Acre.	
	Irrigated.	Unirrigated.
Jawár	...	280
Bájra	...	280
Gram	...	480
Moth	...	240
Múng	...	200
Wheat	560	360
Barley	560	320
Gochai	640	480
Rice	640	...
Cotton	240	160
Sugarcane	1,000	...

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. The average consumption of food per head has already been noticed at page 49. 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.

Chapter IV, B.

Live Stock.

Average yield. Production and consumption of food grains.

Grain.	Agriculturists.	Non-agriculturists.	Total.
Wheat	...	981,177	981,177
Inferior grains ..	1,467,833	55,278	1,523,111
Pulses	382,568	345,485	728,053
Total ..	2,350,401	1,381,940	3,632,341

The figures are based upon an estimated population of 536,959 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 some 16 lakhs of maunds available for export to the principal marts in the Hissár and Gurgáon districts composed as follows; *Jowár* 4 lakhs, barley 3 lakhs, gram 6 lakhs wheat 27 ½ lakhs; miscellaneous ½ lakh.

SECTION B.—LIVE-STOCK.

Cattle.

Table XXII shows the live-stock of the district as returned in the Administration Report. According to an enumeration made in 1875, by Settlement officials, the number of cattle in the district as shown in the margin.

Of Agriculturists.		*Of Non-agriculturists.*	
Bullocks	97,026	Horses ...	4,237
Cows	214,853	Asses ...	11,888
Buffaloes	106,540	Camel ...	2,426
Bulls	1,545	Goats and Sheep ...	47,119
		Pigs ...	8,011
Total...	418,974	Total ...	73,684

The number of bulls and buffalo bulls is obviously much under the mark, but as these animals belong to no one in particular, and stay out in the fields or jungles at night, this result is not surprising. The number of camels is also too low, but many of these owned in the district may no doubt have been absent carrying elsewhere at the time of the enumeration: the incorrectness of the account of the pigs is not very important perhaps. The number of cattle of agriculturists gives an average of about five to a house; but as very few are found in the towns or with certain classes, such as Afgháns and others, the actual number owned by each Játt family is nearly double this. Unfortunately the district no longer contains all these cattle. The drought of 1877-78 was the most disastrous, in point of loss of stock, which ever occurred in Rohtak; and by deaths, or sales, or transfers, the cattle of the people were so reduced in numbers that when an enumeration was made in May 1878, the survivors were found to be as in the margin, showing a loss of 176,808 head of cattle. These figures were confirmed by a second enumeration, made in November 1878, of the oxen and the cows in the district, and which showed the numbers to be—oxen 64,050, cows 119,767; the increase in the oxen was chiefly due to a different method of fixing the age of calves from that formerly used, and perhaps in part to purchases of new animals

	Number.
Bullocks	59,281
Cows	130,772
Buffaloes	50,568
Total ...	240,621

Losses of 1877-78.

Chapter IV, B.

Live Stock.

Losses of 1877-78.

for the sowings of the spring crop of 1879. Some of the animals found missing in May and November may, no doubt, have been away in the Siwalik hills, but there is no reason to believe that any great numbers were there. The loss one way or another was at least 150,000 head, of which number perhaps one-third were sold at nominal prices. This calamity was due simply to the drought. It is the practice in the district to stack large stores of fodder in order to provide for a five months supply of food to the cattle yearly, and as a safeguard against seasons of drought; but the autumn harvest of 1876 had not been a very good one in this respect, and in 1877 not one single unirrigated field of *jowár* or *bájra* came to maturity. The stocks of fodder, which were already low, soon became exhausted; grass entirely disappeared; and such of the weakly cattle as could not be sold, were left to die of simple starvation. The loss to the people was very severe, and it will be years before it is fully recovered. The evidence of its reality depends on no mere enumeration only; the dead animals cumbered the ground round the villages, and carcasses were scattered everywhere in the fields. It is an ill wind, however, that blows nobody good; and all through the year of 1877-78 the *chamárs* and other menials lived royally on the dead animals; without that supply they would have been dying of starvation themselves.

Breed of cattle.

Oxen.

The oxen and cows of Rohtak district are of a very good breed, and particularly fine in size and shape. A touch of the Hánsi strain probably pervades them throughout. The oxen of the villages round Berí and Jeházgarh have a special reputation, which is said to be due to the fact that the Nawáb of Jhajjar kept some bulls of the Nágór breed at Chhúchakwás and allowed the cattle of the surrounding villages to have recourse to them. The breed is called after Boudh, a village in the Dádri *iláka*, not far from Jeházgarh; and is small, hardy, active, and hardworking. The breed is said to have fallen off since the confiscation of the Jhajjar State. A fairly well-to-do Játí will have 8 or 10 head of cattle of kinds, small and large, in his yard, and these will yield him about four cart-loads of manure yearly. The people realise large sums from the sale of cattle and manufacture of *ghi*,—the income from the former for the whole district has been put at 8 lakhs of rupees yearly, and from the latter at 1½ lakhs. The *zamíndárs* have a practice of selling their oxen after one crop has come up, and buying fresh ones for the next sowings, thereby avoiding the expense of their keep for four or five months: this custom is peculiar to the Delhi territory. An ox is called *bachra* for the first two years of his life, then *bahrá* for two years more, after which he is a full-grown *baladh* and is put to work: if taken care of, he will be fit to labour for ten years, after which he becomes old, and is called *dhándá*. The oxen are emasculated at the age of about 2½ years by the *chámars*, who follow the usual Eastern practice of destroying the parts by blows from small sticks. A pair of fine oxen in full strength and vigour will ordinarily cost Rs. 80-100: at present, owing to the recent losses and the drain for carriage for the Kábul war, it is quite possible that prices are very much higher than this. A cow bears names corresponding to the males till she is four years old, and has her first calf, when she becomes a *gáe*. Where

Cows.

Chapter IV, B.

Live Stock.

she is well looked after, she will bear five or six calves, and live 18 years. The average yield of milk is about five seers a day. A good cow costs Rs. 20-25. The bulls of the country side are not all good. A large number of inferior animals, who have been released as an act of piety, are allowed to wander about the villages, and old bulls are left to mingle with the herds long after their prime of life has passed. As they belong to nobody, nobody looks after them, but as they trespass in the fields and pilfer the crops boldly on all sides for themselves, they are generally in fair condition. There are altogether in the district twenty Government bulls, distributed as follows: *tahsíl* Sámpla 4, *tahsíl* Rohtak 3, *tahsíl* Jhajjar 4, *tahsíl* Gohána 9. They have been supplied by the Hissár cattle farm and are of the Harriána breed which is the only description that has found favour, with some leading agriculturists of the district, but they nearly all died, and the experiment has not been repeated. Buffalo bulls are not common; most of the male calves are sold to dealers who take them to Sirsá and elsewhere where there is a demand for them. A young male buffalo is called *katra* for two years, and then for two years more *jhotra*; after four years of life he reaches the dignity of a full-grown bull—*jhotá* or *bainsa*. The cow bears her first calf when 4½ years old, and will produce six or seven in all: her cost is about Rs. 45. An old buffalo is called *khola*. The Rohtak buffaloes are fine animals, and, owing to the presence of the tanks, are found almost in as large numbers in many rain-land villages as in the canal estates. Those of the villages round Butánah and Nidánah (Rohtak) are famous for their breed.

Bulls.

Buffalo bulls.

Buffalo cows.

Horses.

Most of the so-called horses are the merest ponies, and belong to barbers, traders and religious mendicants. Till quite recently, no village headmen used to possess horses: a few, however, have now begun to display equestrian tastes. As has been already remarked, the Gúriáni Patháns were once famous horse breeders, but of late years they have found the occupation almost unprofitable, and they are generally abandoning it. There is hardly such a thing as an animal of good blood in the district; but since 1877 there have been three Government stallions at head-quarters which are freely resorted to by the owners of mares, and an improvement of the country strain may therefore be looked for. A colt is called *bachera*, and a filly *bacheri*, till three years of age. The asses belong entirely to the potters; they are of poor breed, wretchedly fed, and cruelly overworked; an ass costs Rs. 12 to Rs. 15. The camels are owned chiefly by a class called Rhabáris; they rarely belong to Játs except in Matanhel (Jhajjar), and a few other villages. A camel is called *bota* or *boti* till it can carry a burden, and then *ónt* or *óntni*. The female bears after five years, and will produce six or seven young up to the age of twenty-five, and will live for thirty-five on forty years. A full-grown camel costs Rs. 70 to Rs. 90: they are employed chiefly in carrying sugar, salt, and cotton to and from Bhiwáni and Rewárí, and places in the Gangetic Doáb, which is called by the Rohtak people Miyan Dáb=*darmiáni doáb*. The goats and sheep (*bher*) are owned, as a rule, by the village menials: in a few Jhajjar estates and round Chándi in Rohtak, the *zamíndárs* also keep them. The females produce usually four kids, one at a time; lambs are called *bhedi*, kids

Asses.

Camels.

Goats and sheep.

Chapter IV, B.

Live Stock.

pát or *pátaira*. The butchers of the towns and Musulmán villages buy up the animals for slaughter. The wool of the sheep is cut twice a year—in April and October; the annual yield of wool of a black sheep sells for four-and-half annas, and of a white sheep for about six annas. The skins and flesh of animals which die in all villages belong by custom to the village *chamárs*; the sweeper class receives one-tenth share of the flesh, and takes the hides of horses, donkeys and camels. A good skin of a cow or ox is worth Rs. 5 unprepared, and Rs. 9 when tanned, and the skin of a buffalo Rs. 7 and Rs. 12; poor skins are worth much less. The shoes which a *chamár* has to supply to a family during the year are worth about Rs. 3½. Cattle poisoning for the sake of the skins is happily rare.

Skins.

Cattle disease, *i.e.*, rinderpest, is unknown, and foot-and-mouth disease is rare; the commonest evils are staggers, colic, and scab; a few deaths are caused annually by snake bites on the tongues of browsing animals. The usual cures are drenches of kinds, in which pepper and oil play a prominent part, and branding also is freely resorted to; but the chief reliance of the people is placed on the efficacy of charmed tags hung over the entrance of the village. The cattle are very much neglected in many ways. They are left to stand in filthy enclosures, ankle-deep in half liquid manure, and, as a rule, except for chopped fodder, they are allowed to shift for themselves; the wiser agriculturists will give the oxen chopped sugarcane or a little green wheat occasionally, but this is not common: the buffalo is perhaps better tended than the other animals are. The extensive breaking-up of land which has taken place since 1840 has greatly restricted the grazing grounds of the villages; the present fodder-supply grown in the fields is not much more than sufficient for the yearly consumption of the cattle, and leaves but a small margin out of which to provide for against seasons of drought; and in many canal estates difficulty is already being experienced on this score. But few decent sized stretches of village jungle now exist anywhere, and our policy of giving proprietary grants has caused the reduction of more than half of the area of the Jhajjar and Bahádurgarh preserves. In 109 villages grazing-fees are taken from the non-proprietary body,—chiefly in the Gohána *tahsíl*. These fees are usually Re. 1 per buffalo or camel per annum; 8 annas per ox, cow or horse; 4 annas per calf; and 2 annas per goat.

Diseases of cattle.

Grazing.

A great fair for the sale of cattle takes place twice a year, in September and March, at Jehazgarh; the average yearly number of cattle attending both fairs since 1871-72 has been nearly 38,000, of which about half are generally sold, largely because of the custom mentioned on page 98. Till 1871-72 the fees from the fairs were farmed, and in that year they realised Rs. 8,000: since then they have been collected as head-fees on each animal exhibited for prizes, and on one occasion only, has the sum realised exceeded Rs. 4,000; Government has now sanctioned their levy by a precentage on the price of the animals sold according to the practice at most Punjáb fairs. The prices prevailing at the fair are generally low, many inferior animals being offered for sale, and the cultivators being desirous in many cases to be rid of their stock. The spring fair is slightly the larger of the two.

Jehazgarh cattle-fair.

Chapter IV, C.

Occupations, Industries and Commerce.

Horse and mule breeding operations and horse-fairs.

The Rohtak horse fair was started in 1882, and the first fair was held on 30th October that year at Rohtak under sanction of Punjáb Government letter No. 651 of 30th June 1882. Owing however to this date clashing with the Batésar fair, the Rohtak Horse Show will commence in future on October 20th. The average number of animals in the last two fairs was 388, and average number sold 12.

The prizes offered in 1882 were Rs. 400 and in 1883 Rs. 350, the latter from Imperial revenue only. There are about 200 branded mares in the district; the donkey stallions are available without mares being branded. There are now four horse and three donkey stallions in the district stationed as shown in the margin. Of the horses two are thorough-bred English, one an Arab, and one a Norfolk trotter.

	Horse.	Donkey.
Rohtak	3	1
Gohána	1	1
Jhajjar	0	1

The donkeys are Italian or Arabian breed. No runs have as yet been established for the produce, which are allowed to go about with their mothers for the first year, and the colts are then generally sold to dealers and the mares kept for breeding. There is one *salutri* at present trained at the Lahore Veterinary College. He is a native of Jhajjar. Owners do not as yet appreciate the advantage of gelding their yearlings, which are picked up by dealers, as noted above, but it is trusted that the offer of prizes for geldings at the show and the appointment of a *siladar* may effect a change. Horse breeding is as yet in its infancy in the district, but the stock of brood mares is good, and a great improvement in the stock will be noticeable in two or three years time.

SECTION C.—OCCUPATIONS, 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 fully 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 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 fifteen 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. The Settlement classification by occupation is given in Chapter III (pages 57, 58). In it the population was divided into 3,56,266, or 64 per cent. agriculturists and 197,051, or 36 per cent. non-agriculturists. The arrangement

Population.	Towns.	Villages.
Agricultural	36,761	261,745
Non-agricultural .	62,761	190,402
Total ...	99,522	454,147

Chapter IV, C.

Occupations, Industries and Commerce.

Occupations of the people.

in classes further shows about 58 per cent. engaged directly in agriculture, 27 per cent. in ministering directly to the wants of the agriculturist—some 8 per cent. in trade, and about 7 per cent. in miscellaneous occupations. More detailed figures for the occupations of both males and females will be found at pages 79 to 87 of Table XIIA, and in Table XIIB of the Census Report of 1881. The figures for female occupations, however, are exceedingly incomplete.

Principal industries and manufactures.

Table No. XXIV gives statistics of the manufactures of the district as they stood in 1881-82. The method of salt manufacture has been described in Chapter I (pages 10, 11), and also at page 76 of Mr. Powell's *Panjáb Manufactures*, while the production of saltpetre is described at page 80 of the same volume. The only manufactures which have any celebrity outside the district are the pottery of Jhajjar (described as the best unglazed collection of the Province in the Exhibition of 1864); the saddlery and leather work of Kalánaur, which is dying out; the muslin turbans interwoven with gold and silver thread; cloth of a peculiarly fine texture called *tanzéb*, a body adorner; and a sweetmeat called *réóri* of Rohtak; the hand *pankhás* and hackeries of Bahádurgarh and the woollen blankets of the district generally.

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:—

Muslins.

The Panjáb has never been famous for very fine cotton manufactures, and the *tanzéb* muslins of Rohtak are probably the best produced in the province. Major Parker reports that the manufacture is limited to one family only, and as the article is but little known the demand for it is small. He also repeats the expressions of regret for the probable extinction of a characteristic handicraft that have so often been heard in reference to many Indian industries. The struggle to keep hand-loom weaving alive seems a hopeless one. The abolition of the cotton duties at Indian ports is said to have made a considerable change for the worse and the wonder is that so much still survives.

Dyeing.

Dyeing is a speciality of Jhajjar. Colonel Harcourt, when Deputy Commissioner of Rohtak, took great pains to have this interesting subject well represented at the Panjáb Exhibition, and sent carefully arranged examples of all the colours produced. The series was a remarkably full one, considering that all the materials were of Oriental growth. For the Calcutta Exhibition Mr. H. W. Steel collected a number of recipes for dyeing in use here, which are of interest as giving authentic information on a subject which is not the less obscure for being usually spoken of in terms of exaggerated admiration. There is real reason for regret that the cheapness with which Germany and England can afford to sell aniline colours, the ease with which they can be applied, and their metallic brilliance must in the long run make them prevail over the duller tints of the Indian dye-vat. But while regretting this, it must in fairness be admitted that the outcry against aniline colour is not always intelligent, for really beautiful dyes can be made from it; and cloth so dyed is unsuspectingly worn by many who denounce it unsparingly. The truth is the natives of this country have quite

Chapter IV, C.

Occupations, Industries and Commerce.

Dyeing.

another idea of colour than that with which they are credited. Unerring taste, severe harmony, and a perfect eye for colour are universally attributed to the Oriental. Some grounds might be given for the contention that the masses of the people, though they have a passion for bright colour, have no taste. The educated Hindú of to-day takes an especial delight in the most violent and offensive colours that can be found in Berlin wool or aniline dyed silk. He could not be so gratified in former times, because the dyer was unable from his materials to produce anything so bright or crude. Mahomedan influence in its best days imposed a sort of reserve and seriousness, but that influence is dying away. Some of the most beautiful colours are now reckoned unlucky or disagreeable by Hindus, whose scale of auspiciousness begins with bright orange and goes through every variety of salmon and rose colour, through scarlets and crimsons to magenta. The greens in popular favour are a violent apple green, and emerald green; and the only blue that is really liked is the raw and crude Chinese blue of English colour makers. Indigo is largely used it is true, but it is scarcely considered a colour, and from the peasants point of view its real use is to hide dirt. Nearly all the tertiary colours, with brown russet and black are neglected. Time, however, has given so perfect a tone to the specimens in Europe by which the Indian colour sense is judged, that no argument can persuade those who do not know the country that a universal love for bright and vivid tints, and not a natural rightness and truth of eye, is the attribute of the Hindú.

Tinsel printing.

A remarkable variety of tinsel-printing which looks like gold embroidery, and yet is a perfectly legitimate means of decoration is done here. The patterns are large and bold, and in some cases seem to be drawn by hand. The tinsel is more solid in texture than usual, and minute pieces of tinted orsidow are used for the centres of flowers. When done on dark blue or black cloth for *pardahs* this work is striking and effective and very cheap. It differs from the tinsel printing of other places in being more clear and open in pattern, and a sparing use of the metal lends it an air of costliness which is unusual.

Pottery.

Jhajjar has a reputation for unglazed earthen pottery, some of which is black inscribed with scratched patterns in amalgam. The forms are good and the ware is harder and stouter than usual. No vitreous glaze is used.

Wood carving.

Doors and *chaukats* are well carved at Rohtak as in many other parts of the Punjáb. Surprise is often expressed at the artistic quality of work of this sort to be found in purely rustic districts. A custom of the carpenters' trade is to employ boys at work from a very early age. His real work is to help his father or his *ustád* in various ways. In his intervals of leisure he learns the use of the carving chisel, and is set to cut zig-zags and other flat ornament on a waste piece of board for practice. From this he advances to a flower and learns to carve enriched mouldings, and is often able to do such work fairly well before he has learnt to saw a board straight or to make a dovetail joint. Children are not thus set to ornamental work in Europe. The English boy is made to "begin at the beginning," and if he learns to carve at all takes it up late. The result is that it is looked upon as a most costly element in English work, and is only met with in the houses of the wealthy.

Chapter IV, D.

Prices, Weights and Measures and Communications.

Minor industries.

In former times many of the native cavalry procured their bridles and other leather equipments from Kalánaur, but the leather trade at Cawnpore and other large centres has by its cheapness driven the leather workers of Kalánaur out of the market. Their style is however peculiarly their own, as they ornament the leather with colour sewn in of various kinds, which makes the headstalls and trappings appear very gay and handsome. At a village near Kalánaur, Kharak, a peculiar kind of stamped cloth in gold and silver tinsel is made. It has been adopted for curtains, and several pairs sent to the Calcutta Exhibition were admired and enquired after. Here again the manufacture is at present confined to one family. The district generally is well known for its strongly manufactured bullock carts and hackeries, and many of the doors of the better class of villagers exhibit no small skill in the wood-carving thereon displayed.

Course and nature of trade.

There are no statistics available for the general trade of the district. The exports and imports of food-grains have already been noticed at page 97. No large centres of trade are to be found in the Rohtak district. Berí, on the road from Bhiwáni to Delhi, has large dealings in grain, and the export of salt from Zahidpur and Silanah is considerable. But, otherwise, the trade is confined to sending grains, cotton and raw sugar to the local marts of Delhi, Súnipat and Bágpat (or Meerut), by small traders and agriculturists, and to a considerable dealing in hides by the butchers of the chief towns and villages. The exports are carried almost entirely in large carts, for which the Delhi territory is famous. The imports are chiefly cloth pieces, country and European, tobacco, sugar, salt, and hardware. Powindah traders pass through the district in large numbers, during October and November, on their way to Delhi, and return in March. A small surplus of grain, *ghi*, cotton, sugar and hemp, is exported to Delhi or Bhiwáni in Hissár in exchange for cotton and woollen piece goods, spices, iron and copper from down country; for salt, from Gurgáon and the Sámbhar lake in Rájputana, and dried fruits from Afghánistan. Sugar, oil, timber and gram, in small quantities, are imported from the towns of the North-Western Provinces.

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

Prices, wages, rent-rates, interest.

Table No. XXVI gives the retail *bazár* 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.

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.
	Rs. As.	Rs. As.
1868-69 to 1873-74 ...	17 6	13 13
1874-75 to 1877-78 ...	19 0	12 10
1878-79 to 1881-82 ...	22 0	11 2

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Prices, Weights and Measures and Communications.

Prices, wages, rent-rates, interest.

Mr. Fanshawe states the results of sales and mortgages between the Regular Settlement and his revision as follows :—"The average "selling price per acre to agriculturists was Rs. 13-11-11, and to "non-agriculturists Rs. 19-3-8; the average of the whole area sold "being Rs. 15-4-9 per acre, and nearly eighteen times the Govern-"ment revenue assessed. Perfectly accurate details of the selling "price of various kinds of land are not forthcoming: such as there are "put the price of canal land at about Rs. 45 per acre, and of rain-land "at Rs. 12-2-0, but these are below the present mark. The figures may "be shown as follows :—

Tahsíl.	Class of Buyer.	Area sold.	Revenue assessed.	Price realised.
		Acres.	Rs.	Rs.
Gohána ...	Agriculturist ...	1,304	1,415	29,570
	Non-Agriculturist ...	662	1,130	15,445
	Total ...	1,966	2,545	45,015
Rohtak ...	Agriculturist ...	2,583	1,769	29,171
	Non-Agriculturist ...	1,895	1,158	27,940
	Total ...	4,478	2,927	57,111
Sámpla ...	Agriculturist ...	724	770	20,438
	Non-Agriculturist ...	361	488	16,605
	Total	1,085	1,258	37,043
Jhajjar ...	Agriculturist ...	4,053	3,256	39,957
	Non-Agriculturist ...	516	363	5,858
	Total	4,569	3,579	45,815
Total ...	Agriculturist ...	8,669	7,180	1,19,136
	Non-Agriculturist ...	3,424	3,129	65,848
	Grand Total ...	12,093	10,309	1,84,984

"In the Gohána tahsíl the mortgage money per acre is higher "than the selling price; this is due to five-elevenths of the mortgaged "area being canal irrigated, while only one-fifth of the lands sold was "so. In Jhajjar the two prices are much the same; in the other two "tahsíls the latter far exceeds the former. For the whole district the "average selling price per acre is Rs. 1-13-4 more than the mortgage "price. The mortgage figures are as on next page.

Rise in prices.

Mr. Fanshawe thus discusses the rise in prices between the Regular Settlement and his revision.

"The sale and mortgage prices of the last 15 years in the three northern *tahsíls* average Rs. 22-9-10 and Rs. 14-14-8 per acre, as against Rs. 10-3-7, and Rs. 9-12-4 in the preceding three lustres, and in the former case have, therefore, more than doubled. From the Revenue Reports of the North-Western Provinces before 1855 A.D., it would appear that a good deal of land was sold at about Rs. 3-4-0 per acre; but these figures are probably not trustworthy. It may be mentioned here that an average price of Rs. 13-13-6 only per acre has been paid for 409 acres of land taken up for public purposes since 1877. Detailed returns of the prices of all important crops for the last 30 years were furnished with the Assessment Reports, and it is unnecessary to do more than refer to the results derived from them here. Between the first period of ten years since the past Settlement was made in 1838, and the last, there has been a rise in prices

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Prices, Weights and Measures and Communications.

Prices, wages, rent-rates, interest.

Tahsil.	Class of Mortgagee.	Area Mortgaged.	Revenue of the Area.	Price realised.
		Acres.	Rs.	Rs.
Gohána ...	Agriculturist ...	3,945	6,308	1,35,908
	Non-Agriculturist ...	1,707	2,947	58,454
	Total ...	5,652	9,255	1,94,362
Rohtak ...	Agriculturist ...	12,008	8,134	87,055
	Non-Agriculturist ...	13,498	9,091	96,556
	Total ...	25,506	17,225	1,83,611
Sámpla ...	Agriculturist ...	5,214	6,195	1,16,484
	Non-Agriculturist ...	2,248	2,458	43,832
	Total ...	7,462	8,653	1,60,316
Jhajjar ...	Agriculturist ...	6,661	6,996	80,208
	Non-Agriculturist ...	3,903	4,275	43,704
	Total ...	10,564	11,271	1,23,912
Total ...	Agriculturist ...	27,828	27,568	4,19,655
	Non-Agriculturist ...	21,356	18,896	2,42,546
	Grand Total ...	49,184	46,464	6,62,201

as follows: the actual increase shown by the rates adopted for valuing the gross produce are lower, as shewn opposite the first column in each case.

Crop.	*Rise in price from between* 1837—47 *and* 1867—77.	*Rise according to rates adopted for valuing the gross produce.*
Wheat	38 per cent.	31 per cent.
Wheat and gram ...	37½ "	26 "
Gram	36 "	26 "
Barley	35 "	24½ "
Cotton	49 "	48 "
Sugarcane	35 "	31 "
Joár	42 "	37 "
Bájra	35 "	29 "
Moth	26 "	19 "

"It was not possible to obtain figures for the period of ten years from 1827—37, which would be more appropriately compared with those of the last ten years of the expired Settlement. The rise, as a whole, with regard to the crops which are principally sold by the people, may be said to have been one of a third, or 33 per cent. The rise in cotton would be expected to be the greatest, owing to the recent demand for that staple in distant markets, and the increase is naturally the smallest in the case of the coarser grains, which are chiefly consumed by the people themselves, and but seldom sold. It has been seen how largely the better and more valuable crops have been introduced since 1838, which is more or less another way of putting the increase of irrigation, though not entirely so: communications have been greatly improved, and the effect is partly seen in the rise of prices."

Weights and measures.

The Government standard weights and measures are in common use among the people; accounts are sometimes made up with the *máp* (1¼ maunds), *baróla* (2 seers), and *matkana* (¼ seer), but no such actual measures of capacity exist. Their square measure is the *kacha bigah*, of which three go to a Government *bigah*, which is equal to five-eighths of an acre. The country *kós* is about one mile and a quarter; *tirna* is the distance of an arrow's flight, and *golimár* that which a pellet from a sling can travel.

Chapter IV, D.

Prices, Weights and Measures and Communications.

Communications.

The figures in the margin show the communications of the district as returned in Quinquennial Table No. I of the Administration Report for 1878-79, while Table No. XLVI shows the distance from place to place as authoritatively fixed for the purpose of calculating travelling allowance. Table No. XIX shows the area taken up by Government for communications within the district. Excepting Hisár, Rohtak is the only district of the Punjáb untouched by a river. The Jamná runs parallel to the eastern border of the district at a distance of 22 to 25 miles. Opposite the Jhajjar *tahsíl* it takes a bend to the east, and is 35 miles distant, while a line from the south-east corner of the *tahsíl* (which comes in 10 miles westwards from the north point) measures 54 miles. A telegraph line is now under construction, the Rewári-Fírozpur Railway crosses the west side of the Jhajjar *tahsíl*, the terminus of the branch line to Farrúkhnagar is only one mile from the border of Yakúbpúr, and the diversion to the Múbarikpúr salt pans almost touches the boundary of Fattehpúr.

Communication.	Miles.
Navigable	Nil.
Railways	Nil.
Metalled roads ...	35
Unmetalled roads ...	480

Roads.

The district is well provided with roads, which cross it in every direction. Some 35 miles of road are metalled along the line from Hissár to Delhi, and round the head-quarters of the district and *tahsíls*, and 480 miles of unmetalled road are cared for by the district officers. The chief lines of communication, besides the main highway above mentioned, are from (A) Rohtak to (1) Gohána, (2) Beri, (3) Jhajjar, (4) Farmanah, and (5) Khakhandah for Súnipat, and (6) towards Jínd and (7) Bhiwáni: (B) from Gohana to (1) Mehím, and (2) Kharkhandah, and (3) towards Hánsi, (4) Safidon, and (5) Súnipat: (C) from Beri (1) towards Bhiwáni, and (2) to Sámpla: (D) from Jhajjar (1) towards Dádri, (2) Kánaund, and (3) Pataudi, and (4) to Farrúkhnagar, (5) Bahádurgarh, and (6) Sámpla: (E) from Kharkhandah to (1) Sámpla, and to (2) Mándauthí and Bádli. The road of the Customs preventive line, which was removed in 1879, runs athwart the district, from Mehím to Bádli, through Kúlánaur, Kánhaur, Beri and Jhajjar, and this will be kept up, although the line has been abolished. The Raja of Jínd's road from Jínd to Dádri crosses the west of the Rohtak *tahsíl* by Baiusi and Basánah; and, lastly, a fair road for driving and riding runs up the whole length of the western spoil bank of the Western Jamná Canal. All the roads are usually in very fair condition, and easy for the traffic of country carts, except after heavy rain. The village roads, however (called *gondhas*), are not good. As a rule, they are about as straight as a corkscrew; they lie below the level of the country, and are consequently badly flooded by rain or by canal cuts bursting; they are perpetually being encroached on, and occasionally a water-course or trench is dug right across them. In the sandy parts of the district, the village roads often end half-way up the slopes of the ridge; and have to be picked up again on the other side. There are bridges on the main canal and over the chief distributaries, but a great many are needed on the minor water-courses, crossing the roads in canal villages and on the canal drainage lines in Sámpla. A fine bridge crosses the Sáhibi depression of Jhajjar, where it passed

through the sand-hills above Dúrináh, and two more, on the Farrúkhnagar road, span the eastern arms of the stream. A bridge is needed across the depression below Bádlí, on the village road which runs from the north to Farrúkhnagar, and which is much used by carts carrying fuel to the salt works. The state of the four principal roads is as follows.

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Prices, Weights and Measures and Communications.

The Dehli-Hisár road.

This road was formerly maintained from district funds, but has now been placed under the Public Works Department. The portion between Rohtak and Delhi, 44 miles in length, is metalled; and has recently been put into thorough repair; but on the Hisár side only the first ten miles are metalled, and that is now in course of repair; it is however intended to complete the unmetalled portion by degrees, which is that between Madínah and Mehím in this district and from Mehím to within eight miles of Hánsi in the Hisár district. There are good bungalows at Bahádurgarh, Rohtak and Mehím; at the first two places there is a *khánsama* and the bungalows are provided with furniture, crockery, &c., complete, but at Mehím there is at present only a *chowkidar*, and travellers have to make their own arrangements for cooking. This bungalow is, however, very seldom used except by district officers.

The Rohtak-Bhiwání road. 29 miles.

This road is now completely metalled. There is a police rest-house at Kalánaur, 14 miles from Rohtak; it is at present very limited in accommodation, but is about to be considerably enlarged.

The Rohtak-Jhajjar road. 21 miles.

This road is now metalled to within six miles of Jhajjar, and the remainder is in course of completion. There are also good unmetalled roads between Rohtak and Gohána, 21 miles, and from Rohtak, *via* Berí to Jhajjar, 24 miles, and thence to Bádlí, eight miles. The portion between the two last named places being the old customs road. There is a good rest-house within the tahsíl enclosure at Gohána, and police resthouse at Berí and Badlí, while at Jhajjar there is the magnificent building which was formerly the palace of the Jhajjar Nawáb, and is now used as a rest-house.

The Rohtak-Kharkaudah road.

This road is unmetalled throughout; and though not so good as the other three, owing to the swampy nature of the country, is opened to wheeled traffic. There is a police rest-house at Kharkaudah.

Rest-houses and *Sarais*.

The district is not well supplied throughout with rest-houses. At Gohána, Sámpla and Mehím, there is a rest-room inside the *tahsíl* building, which, in the latter place, is now occupied by the police. At Bahádurgarh, part of the old Biluch palace gives shelter to travellers, and in the Jhajjar *tahsíl*, the two residences of the late Nawáb in the Jahán-árá, (commonly called Jowárá) garden at the head-quarters and at Chhúchhakwás have been converted into splendid bungalows; the Nawáb's shooting box at Zahidpúr, however, is being allowed to fall into utter disrepair. Small police rest-rooms have been built at Siwánah Mál, Kharkaudah, Bainsí, and Bádlí; but there is no room or rest-house at Sálháwás, or any further south than four miles below the north border of Jhajjar *tahsíl*; the glass palace at Farrúkhnágar, however, is only two miles beyond the edge of the district. The customs bungalow at Berí has now been taken over as a district rest-house, and there is a good residence at Madínah on the Hisár road. Canal bungalows have been built at Sánghí, Gohána, Bútánah, and recently, at Saragthal; another is situated two miles

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Prices, Weights and Measures and Communications.

Rest-houses and *Sarais.*

above the northern boundary of the district, at Koranah; these, by the courtesy of the Canal Department, are available for district officers in camp. Small *sarais*, farmed by Government, exist at Sámpla (two), Kahráwar, Farmánah, Rohtak, Madínah and Kalánaur. There are no large *sarais* used by traders and merchants; carts and camels usually journey on all night long with their loads.

Post offices.

There are imperial Post Offices at Rohtak, Bahádurgarh, Berí, Bádlí, Bútánah, Dighal, Gohána, Gúriání, Hassangarh, Jhajjar, Kharkaudah, Koslí, Kharak, Kalánaur, Kánhour, Mundlánah, Mehím, Nigánah, Sámpla, Sánghi, Sálháwás and Silánah. There are money order offices and savings banks at Rohtak, Bahádurgarh, Berí, Bádlí, Gohána, Gúriání, Hassangarh, Jhajjar, Kharkaudah, Kalánaur Mehím, Sámpla, Sánghi, and Sálháwas.

Telegraphs.

There is no telegraphic communication at present, though it is expected that this deficiency will shortly be supplied. The Ferozepúr-Rewárí Railway passes through the outskirts of the district in the Jhajjar *tahsíl*, in which there are stations at Koslí, Thorlí, &c.