

CHAPTER III.—ADMINISTRATION.

Section A.—Administration and Divisions.

The district is in the charge of Deputy Commissioner under the control of the Commissioner of the Ambala Division. A Sub-Divisional Officer, usually an Assistant Commissioner, is in charge of the Kaithal Sub-Division which contains the Kaithal tahsil and the Guhla sub-tahsil. There are four tahsils with head-quarters at Karnal, Thanesar, Panipat and Kaithal. A Naib-Tahsildar holds charge of the Guhla sub-tahsil under the Tahsildar of Kaithal.

Section B.—Criminal and Civil Justice.

The criminal judicial work of the district is supervised by the District and Sessions Judge of the Karnal Sessions Division. The official staff of Magistrates consists of the District Magistrate, the Senior Sub-Judge and the Sub-Divisional Officer, Kaithal (who have also powers under Section 30, Criminal Procedure Code), 2 Extra Assistant Commissioners with 1st class powers, 4 Tahsildars with second class powers and 6 Naib-Tahsildars with 3rd class powers. The Junior Sub-Judge stationed at Karnal is allowed to perform criminal work during September.

The following gentlemen exercise criminal jurisdictions as Honorary Magistrates in certain parts of the district :—

Names of gentlemen exercising judicial powers.	Powers.	Jurisdiction.
(1) Sardar Jowala Singh ...	2nd class	Tahsil Thanesar, except the jagir villages of Jaswir Singh & Kesar Singh.
(2) Sardar Gurdit Singh ...	Do.	Karnal Tahsil, except 41 villages specified in Punjab Govt. notification No. 610, dated 10th November 1902.
(3) Muhammad Umar Daraz Ali Khan.	1st class	Karnal Municipality, Gharaunda, Indri and Butana Thanas.
(4) Nawab Muhammad Ibrahim Ali Khan.	2nd class	Villages in the Kunjpura jagir.
(5) Muhammad Akram Khan ...	Do.	Tahsil Panipat.
(6) Hony. Capt. Jehangir Khan...	3rd class	Kaithal Tahsil.

The district, though usually free from serious and violent crime, is notorious for cattle thefts. A considerable traffic in minor girls is carried on. For offences of all classes the percentage of convictions to cases admitted is not less than 59 per cent. The following tribes have been registered under the Criminal Tribes Act :—

(1) *Balochis*.—This tribe generally goes far afield to commit burglaries in the larger towns of other districts. Their operations

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are seldom connected with this district. It is very difficult to obtain accurate information about their doings. It is generally believed that they absent themselves only for the purpose of committing burglaries.

(2) *Tagus*.—This tribe rarely attempts serious crime, but is addicted to petty theft. They are past masters of the art of disguise. They frequent fairs and *melas* where they pick pockets. They also travel far, particularly to Sind.

(3) *Sansis*.—Seem to be settling down and many of them have taken to earning an honest livelihood, going in mainly for agriculture. The Sansi Kanjars, however, are greatly addicted to crime. They were only registered first in 1910.

(4) *Baureahs*.—Changed their place of residence from Muzaffarnagar to the Karnal District. As they are addicted to serious crime they were registered by orders of the District Magistrate. Thirty-seven were registered in Karnal District and all absented themselves and mostly returned to Muzaffarnagar. Several were arrested and sent for trial under the Criminal Tribes Act, but all were acquitted. They only came to Karnal to escape registration, and really belong to Muzaffarnagar, and so on being registered they at once absconded.

The civil judicial work is supervised by the District and Sessions Judge of Karnal, who is the principal civil judicial officer in the district. He has under him two Subordinate Judges stationed at Karnal and two Munsifs stationed at Karnal and Kaithal, respectively. Practically all the civil work is done by them, but a few civil suits are sent to the Sub-Divisional Officer, Kaithal.

Civil justice.

The following gentlemen have civil powers as Honorary Munsifs:—

Names of gentlemen.	Powers.	Jurisdiction.
(1) S. Jowala Singh	Munsif	Tahsil Thanear, except the jagir villages of Jasmir Singh.
(2) Sardar Gurdit Singh		Tahsil Karnal, except 41 villages specified in Punjab Govt. notification No. 610, dated 10th April 1902.
(3) Nawabzada Muhammad Umar Draz Ali Khan.	1st class	Certain villages of the Karnal Tahsil.
(4) Hony. Capt. Jahangir Khan...	3rd class	Kaithal Tahsil.
(5) Colonel Muhammad Akram Khan.	Do.	Panipat Tahsil.

On the whole civil judicial work is light. The people of Kaithal Tahsil are the most litigious.

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Local Bar.

The results of the enquiries made at last settlement for Kaithal and Pargana Indri formed Volume VIII of the Punjab Customary Law Series. Similar information for the Panipat Tahsil and Karnal pargana will be found in Volume VIII (b) of that series, and in regard to these two circles the late Sir Denzil Ibbetson's Karnal Settlement Report can also be consulted. The vernacular records of all these enquiries are preserved in the district office and have been revised in the present settlement.

The legal practitioners working in the district are 3 Barristers, 5 1st grade and 16 2nd grade Pleaders, 8 Mukhtars and 7 Revenue Agents. Of these 5 Pleaders and 2 Mukhtars practise in Kaithal and 3 Mukhtars in Panipat. The rest practise in Karnal. There are 6 1st grade and 34 2nd grade petition-writers, of whom 22 work in Karnal, 8 in Kaithal, 4 in Thanesar, and 5 in Panipat.

Section C.—Revenue Administration.**PREVIOUS SETTLEMENTS.**Prior to
British rule.

The administrative fabric reared by the Moghal Emperors was destined to crumble under the successive revolts and invasions of the eighteenth century. The country north of Delhi, impoverished by the armies of Nadir Shah, by the hordes of Mahrattas and the opposing Imperial troops, fell an easy prey to the Sikh marauders flushed with the victory at Sirhind. The northern part of the district was parcelled out between a number of Sikh chieftains and their adherents, of whom the most important were the Bhais of Kaithal, the Sardars of Thanesar and Ladwa, and the Pathan Chiefs of Kunjpura. The country south of Karnal was a no-man's land, seized sometimes by the Sikhs and sometimes by the Mahrattas and their adherents. Throughout the country the rule was the rule of the strongest. The state of things prevailing in the Delhi territory was graphically described by the Civil Commissioner in 1820 :—

“Revenue administration there was none ; the cultivator followed the plough with a sword in his hand ; the Collector came at the head of a regiment ; and if he fared well, another soon followed him to pick up the crumbs.”

As for the rule, or rather misrule, in the Sikh States, Mr. Douie remarks* : “Their revenue system consisted in squeezing the weak, and getting as much as they could out of the strong.”

* For a full description see Mr. Douie's Settlement Report, paragraph 17.

The preliminary stages in the formation of the old Panipat district, the northern part of which corresponded to the present Panipat tahsil and the Karnal pargana, were completed in 1824, and summary assessments had been introduced in almost all villages except those assigned to the Mandal family in the Karnal pargana.

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fore
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settlement.

These summary assessments were extremely oppressive, amounting to half the gross produce of the cultivation in well-developed villages, besides assessments of grazing and a tax on cattle. But in fact the assessments were purely nominal and were never collected. What could be got from the people was taken, and the remainder accumulated as balance. The mode of collection was as vexatious and extortionate as the assessment was oppressive. A vivid description of the chaotic administration is given in paragraph 125 of the Karnal Settlement Report by Mr. Ibbeston.

By 1828 the revenue survey of the district had been completed, and by giving firm ground to work upon had rendered impossible those gross inequalities of assessment which had till then been unavoidable. The half-share principle was abandoned, and the demand was estimated to absorb about a fourth of the gross produce. The demands, however, still averaged Rs. 3-8-0 to Rs. 4-3-0 on cultivation in small weakly estates, and Rs. 2-6-0 to Rs. 3-3-0 on the whole culturable area in fully peopled villages. Field-to-field records were prepared showing the proprietary and cultivating tenures. Direct management was still frequently resorted to and balances were large, but the general state of affairs was greatly improved. After the famine of 1833 the assessments were again largely reduced, and between 1836—39 the outstanding balances were remitted.

In 1837 the revision of settlement was ordered and finally reported on by Mr. Edmonstone in 1842. The last summary demands were reduced by 15 per cent. in the Khadar of Panipat and Karnal, and the incidence of the revenue per cultivated acre was Rs. 2-11-0. In the Bangar, where canal irrigation had brought prosperity, the current demand was raised by 6 per cent. and the incidence upon cultivation was Rs. 2-8-11. Mr. Ibbeston, after revising this settlement, considered that it had worked well, especially in the Panipat tahsil, but sufficient allowance had not been made for the inferior soil and the still more inferior cultivation of the Rajputs and Syeds who held the northern villages of the Karnal Khadar.

In the Bangar the settlement was soon vitiated by the deterioration of soil caused by the faulty alignment of the canal

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by over-irrigation and flooding, and Mr. Ibbetson considered the remissions inadequate.

Up to 1847 the Mandal jagirdars collected their share of the produce in kind, and, possessing neither the name nor the authority of executive officers, were involved in constant struggles with the proud and quarrelsome Rajputs who compose the population of the majority of villages included in the grant. The unsatisfactory state of this tract was brought to the notice of Government from time to time, but it was not till 1847 that a settlement was sanctioned. The settlement was carried out by Mr. Gubbins, but the result was received with discontent by both the Mandals and the people, and in 1852 Mr. Ross was ordered to revise the work. Even this revision was not considered satisfactory, and in 1855 Mr. Ross again reported on the tract. He took the rates Captain Larkins was then using in his revision of the Kaithal settlement, increased them somewhat, and adopted them as a guide. But he made little use of them, and trusted rather to his knowledge of the tract and to the past history of each village. Sanction to the new arrangements was delayed by the Mutiny and the transfer of the district to the Punjab, but in 1860 the Punjab Government sanctioned the settlement as having already been in operation for some years, "on the distinct understanding that the rights of the Mandals are limited to an assignment of the revenue, and do not extend to the management of the land, and that in the event of calamities of the season, deterioration by saline efflorescence, or other reasonable cause, the zamindars shall receive the same equitable indulgences as are granted to Khalsa villages."

Mr. Ibbetson's
settlement.

The settlements of the Panipat tahsil and of the Karnal pargana were revised by the late Sir Denzil Ibbetson in 1873—1879.

In the Panipat Khadar, the inhabitants of which were characterized as prosperous, though not inordinately so, the demand of 1876 was enhanced by 2·4 per cent., while the additional cesses raised the total increase to 6·4 per per cent., or 11·9 per cent. on the demand of the previous settlement. The incidence of the burden was redistributed so as to afford much-needed relief to many of the estates which had, from various reasons, become impoverished.

The soil of the Panipat Bangar, naturally most fertile, had been deteriorated by the faulty alignment of the canal and its distributaries, and by over-irrigation which had water-logged the country and had called into existence the evils of *reh* and swamp. The population had been debilitated by sickness. The

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condition of villages was very unequal. Those on high ground which had not suffered from flooding were in the most prosperous condition, while the estates which had been most severely stricken by *reh* and swamp were in the most pitiable state.

The increase taken in this circle was only 1·4 per cent., while additional cesses raised the enhancement to 5·3 per cent. on the total burden of 1876 and to 6·2 per cent. on that of the previous settlement. Up to the revision of settlement, canal-irrigated land had been assessed like other land to a full assessment realized year by year irrespective of the area irrigated. The result was that villages which suffered from swamp and *reh* were forced to continue irrigation in order to meet a demand which had been excessive. The most noteworthy feature of Mr. Ibbetson's arrangements was the separation of a portion of the demand in the form of owner's rate charged on the area actually irrigated harvest by harvest. The people were thus in a position for the first time to reduce their irrigation if circumstances so demanded, instead of being forced to continue irrigation in order to meet the demand. In practice the owner's rate was fixed at half the occupier's rate, or rate charged by the Canal Department for water supplied.

In the Karnal Khadar, though the soil in general is not fertile, a considerable portion of it is always very sandy and poor. Since the settlements which Mr. Ibbetson was revising, the demand had been reduced considerably. The Jat and Ror villages Mr. Ibbetson considered on the whole prosperous, but some of the Taga, many of the Rajput, and all the Syed villages were greatly impoverished and sadly needed relief. In this circle a reduction of 8·7 per cent. on the current demand was given, which the imposition of the new cesses reduced to a relief of 4·4 per cent. on the total burden.

In the Karnal Bangar, as in the corresponding tract of Panipat, the soil, naturally fertile, had been seriously deteriorated by *reh* and swamp. The people were much reduced by sickness, but it was found possible to increase the demand, as two of the largest and best villages had improved. The increase taken was 12·4 per cent., or with cesses 16·9 per cent., on the demand of 1876, and 19·7 of the demand taken at the previous settlement. This circle, like the Panipat Bangar, benefited from the re-adjustment of the internal distribution, and by the introduction of the owner's rate system.

The Karnal Nardak was then an arid tract of scanty rainfall, and more than 90 per cent. of the cultivated area was under

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inferior sorts of grain. The cultivation, unsupplemented by the produce of cattle, was quite unequal to the needs of the population, but, on the other hand, there was ample room for expansion in the higher and drier soils. The population was multiplying rapidly, but was still the poorest in the district and their resources had been much impaired by the cattle epidemic of 1869. In this circle a reduction of 19·3 was given in the current demand, equivalent with cesses to a reduction of 16·8 per cent. of the total burden as it stood in 1876 and to a reduction of 13·5 on the demand of 1856.

Of this well-known settlement it is sufficient to say that the records and assessment attained a rare standard of accuracy and justice, and the author is gratefully remembered by all as the founder of a new era of settled prosperity.

The Indri par-
ana, Thane-
sar and
Kaithal prior
to Mr. Douie's
assessment.

The Thanesar district, which eventually included the Pipli (now Thanesar) tahsil, the Indri pargana, and the Kaithal tahsil, was formed gradually by lapse on the failure of heirs, as in Radaur, Thanesar and Kaithal, by the deposition of the Raja of Ladwa in 1846 and by the reduction of the remaining chiefs to the status of jagirdars. As territories escheated to the British Government they were summarily settled, the assessment being in almost all cases most oppressive. The summary settlement of the lapsed Kaithal State was made by Sir Henry Lawrence in 1843 and revised by Captain Abbott four years later. This revision was intended to be the regular settlement, but was never reported to Government for sanction. The regular settlement was actually carried out by Captain Larkins in 1853--1856. The rest of Pipli and Indri had been assessed by Mr. Wynyard between 1848 and 1852. But it was soon found that the villages could not pay Mr. Wynyard's assessments, and Captain Larkins was ordered to revise them. He submitted his report in 1856, but other revisions were required, and the demand for Pipli and Indri was not finally fixed until 1862.

Mr. Douie, who revised Captain Larkin's Kaithal settlement, considered that it had worked well. As to the Pipli (Thanesar) tahsil, Mr. Douie thought that the Bet Markanda, and part of the Northern Chachra, the Bangar, and the Khadar had enjoyed a moderate degree of prosperity since the revision of 1862. The Pehowa Naili, now transferred to the Kaithal tahsil, the Southern Chachra, and part of the Northern Chachra suffered partly because of the unhealthy climate and partly because the full demand was collected in good and bad seasons alike without regard to the precarious nature of the harvests.

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Mr. Douie's revision, known as the Karnal-Ambala settlement, lasted from 1882 to 1889, and embraced the Kaithal tahsil and the Indri pargana of the Karnal district, and the Pipli and the Jagadhri tahsils of the Ambala District. The Pipli tahsil has since been transferred from Ambala to Karnal, and is now known as the Thanesar tahsil. The Jagadhri tahsil is still part of the Ambala district, and with it we are not now concerned.

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In the Powadh circle, which includes most of the villages south of the Ghaggar, nearly all of which are in the jagirs of the Bhaïs of Arnauli and Sidhowal, the increase taken was 11 per cent.

The Kaithal
tahsil.

Only a trifling enhancement of 3 per cent. was taken in the small Andawar circle on the watershed between the Sarusti and the Ghaggar. In neither of these circles had there been any large increase of cultivation or prosperity.

The Nardak and Bangar circles of Kaithal were then unirrigated, with the exception of a trifling amount of well irrigation in the villages bordering on the Naili tract. In the Nardak little more than $\frac{1}{3}$ rd was under cultivation, but this area and the number of ploughs at work was double what it had been thirty years before. Population had risen by 45 per cent. The crops, as in the Karnal Nardak, were inferior grains, and the people, chiefly Rajputs, depended largely on their cattle. The enhancement, excluding owners' rates, taken was 44 per cent. on the existing demand.

In the Kaithal Bangar, which occupies the western half of the southern uplands, nearly $\frac{2}{3}$ ds of the area was under tillage. In some of the largest estates no waste remained. The increase in population was 38 per cent. The crops were of the same class as in the Nardak, but tillage was more careful. Though the grazing had been much curtailed, the people managed to keep a large number of cattle. The increase taken amounted to 48 $\frac{1}{2}$ per cent.

Mr. Douie considered that the demand in the Nardak and Bangar was fairly secure under existing circumstances. But the Sirsa Branch Canal was extended to the tracts, and the demand was paid with ease.

Owing to the tahsil boundaries then existing, Mr. Douie was compelled to divide the Naili tract into two circles, the Kaithal Naili and Pehowa Naili. In the Kaithal Naili, the area

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flooded by the Sarusti and the Ghaggar, there had been practically no changes, and the condition of the landowners was unsatisfactory. The demand was practically unaltered, though the internal distribution was much changed. In the Ghaggar estates large reductions were granted, but these were more than counter-balanced by increase taken in the Sarusti villages.

In the Pehowa Naili, flooded by the Umla and Sarusti, there had been an increase in cultivation and the number of ploughs, but cultivation had declined. As in the Kaithal Naili, the demand was left practically unchanged.

The small Pehowa Bangar circle had prospered on the whole; cultivation had increased by 46, and population by 20 per cent. since the settlement of 1856. An increase of 24 per cent. was taken.

The Pipli
(Thanesar)
tahsil.

Mr. Douie described the Pipli (now Thanesar) tahsil as on the whole far from prosperous and as having suffered much from previous over-assessment between 1850 and 1862. A comparatively small increase was taken, amounting to only 7 per cent. for the whole tahsil. But whereas the assessments of the prosperous Markanda Bet and the Northern Chachra were raised by 18 and 10 per cent. respectively, the large and unfertile circle known as the Southern Chachra was given a reduction of 13 per cent. Progressive assessments were given in villages which had been recently developed by Mali immigrants. Slight increases were taken in the small Bangar and Khadar circles.

The Indri
pargana.

In Mr. Douie's opinion the Indri pargana, in spite of the reductions given at three revisions of settlement, was still not prosperous, and further relief was required. Population had declined. Well irrigation, except in the Khadar, had decreased. The value of land was small in the upland circles, and the out-turn precarious. In the Khadar the land was poor, and the valuable canal sailab had lately been reduced by $\frac{2}{3}$ ths. There had, however, been a rise in the cultivated area, though, owing to the varying classification of cultivation and new waste, the exact increase is a matter of doubt. In the Khadar, where cultivation was stationary, a reduction was given of 7 per cent. on the existing demand, the greater part of the decrease being given in jagir estates which had not been given the full benefits of previous revisions. In the Bangar there was a slight increase of cultivation, but well irrigation and population had declined. The decrease in canal sailab was balanced by a considerable increase in canal irrigation.

The revenue was left practically unchanged. The population and cultivated area of the Nardak had increased, but well irrigation had declined. Produce was most precarious, and the fixed demand was retained. Fluctuating assessments were, however, given to 22 estates of the circle.

The introduction of fluctuating assessments was a noteworthy feature of Mr. Douie's settlement. During settlement operations a number of estates in the Naili, the Southern Chachra and the Indri Nardak, were placed under fluctuating assessment. In the Indri Nardak circle this system was continued in 22 villages, and others were to be allowed the option of applying for it. The Deputy Commissioner, with the sanction of the Commissioner, was to have the authority to cancel the settlement of any estate of which more than one year's demand was in balance, and to collect the revenue at fluctuating rates. Similarly, in the Naili and Southern Chachra villages, the people were given the option of accepting at any time during the currency of the settlement an assessment fluctuating with the area of crops harvested.

It was realized at the time that the people would avoid a fluctuating demand if possible. The introduction of irrigation from the Western Jumna Canal caused the number of villages under fluctuating demand to be reduced. In the Naili only a few villages which had utterly broken down applied for a fluctuating demand.

Mr. Douie's settlement was considered eminently fair. The large increase of cultivation and the introduction of canal irrigation in the south of Kaithal has caused the assessment to become extraordinarily light. Elsewhere the demand has been paid without difficulty, except in the Naili and Southern Chachra, where conditions between 1895 and 1904 were such as to make any assessment difficult to meet.

The intervening period between Mr. Ibbeston's and Mr. Douie's settlements and the settlement of 1904—1909 was marked by important changes. In 1879 Sir Denzil Ibbeston left a tract swamped and water-logged by the ill-designed alignment of the canal; cultivation was being ruined by saline efflorescence and the population racked with fever and ague. Within the next five years improvement had begun. The canal was realigned and the worst faults in the distribution of the water removed. The health of the people began to revive, and cultivation reverted to more

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wholesome conditions. At the close of Mr. Douie's operations in 1889 the whole of the Nardak of Karnal and Kaithal was an arid tract, subject to continual recurrence of famine. The Kaithal Bangar was unirrigated. By 1891 the Sirsa Branch had begun to irrigate, to be supplemented by the Nardak Rajbaha in 1898.

These changes altered the face of the district. Except in Panipat, the tracts which have not shared in canal extension, whatever their previous prosperity, have remained comparatively backward and stationary. Their population has not increased, nor is their productiveness greater. On the other hand, the regions of chronic scarcity have become flourishing stretches of cultivation. Villages have grown out of all knowledge, and the value of produce harvested steadily year by year has increased enormously.

Besides these special advantages, Karnal has shared in the general development which has been in progress for the last 25 years. Railways have been built and roads improved. New markets have sprung up, and local trade now reflects the international movements of commerce. The rise in prices and the demand for labour have had a profound effect on the development of tenures and rents and the value of land. The rise in the price of cattle and of dairy produce is also a marked feature of the last 30 years.

The settle-
ment of
1904—1910.

The last regular settlement was begun in October 1904 by Mr. A. M. Stow, Mr. R. Humphreys and later Mr. F.W. Kenaway were in charge of settlement operations in the Thanesar tahsil. The settlement was finally concluded in September 1910.

The chief problems to be dealt with in the reassessment of the district were—

- (1) The enhancement to be taken on account of extended cultivation and irrigation, the rise in rents and prices, and the generally increased prosperity of the people.
- (2) The assessment of canal-irrigated land.
- (3) The treatment of the tracts subject to inundation from hill torrents.

Assessment
circles.

According to the common practice in the Punjab, each tahsil was divided into assessment circles, roughly corresponding to the physical conformation of the country. The special report as to assessment circles was submitted in September 1905, and the

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Settlement Commissioner sanctioned the following sub-divisions of each tahsil for the purposes of assessment :—

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Panipat.	Karnal.	Thanesar.	Kaithal.
1. Khadar.	Khadar.	Khadar.	Nardak.
2. Bangar.	Bangar Karnal.	Bangar.	Bangar Kaithal.
3. ...	Bangar Indri.	Bet Markanda.	Bangar Pehowa.
4. ...	Nardak.	N. Chachra.	Naili.
5. ...	...	S. Chachra.	Indarwar.
6. ...	...	...	Powadh.

It is not necessary to detail here the extent to which these sub-divisions differ from those made at previous settlements. The changes were few and were described in the special report referred to. As mentioned in the preceding paragraph, the Financial Commissioner subsequently ordered the old assessment circles, Khadar, Bangar and Nardak, to be retained for the two parganas of the Karnal tahsil, Karnal and Indri, instead of one Khadar and one Nardak circle for the tahsil. The town lands of Panipat and Karnal were assessed separately. It will be convenient if the statistics for these two urban tracts are maintained separately in future.

Each assessment circle was further sub-divided according to qualities of different soils and their facilities for irrigation. The question of soils was dealt with in the special report on assessment circles referred to above. The following soil classification was sanctioned by the Settlement Commissioner :—

Irrigated	{	1. Chahi	...	Irrigated by wells.
		2. Nahri	...	Irrigated by canals.
		3. Abi	...	Irrigated from tanks.
Unirrigated	{	4. Sailab.		
		5. Barani.		
		6. Bhur.		
		7. Tibbi.		
		8. Dahr.		

Chahi irrigation was further sub-divided into irrigation from bricked and from unbricked wells, and in the case of nahri, distinction was made between irrigation by lift and by flow. Soil was considered chahi or nahri which had been actually irrigated in two or more harvests during the four years preceding settlement and for which permanent means of irrigation still existed.

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Soils.

Irrigation from tanks is rare and entails great labour. It is, however, useful in assisting to ripen the rice crops if the late rains are unfavourable. Numerous ponds and jhils which have survived the drainage system in the Karnal and Panipat tahsils are let to Jhinwars for sanghara (water nut) cultivation and bring in considerable rents to their owners. The best description of the unirrigated soils of the district is given in paragraph 4 of Mr. Ibbetson's Karnal Settlement report. He says: "There is no real clay, the soil varying from stiff loam to pure sand. The stiffest loam is found in the hollows and drainage lines, where the action of the water has washed out the sandy particles. It is locally known as dakar and is differentiated by the clods not crumbling in the hands. The sandiest soil is known as bhur. It is found in the riverain tract, chiefly in patches lying in the beds of old river channels and also occasionally on the watershed, where it would seem to have been collected by the wind. It includes all soils that do not form clods under the ploughs. Intermediate soils are classed as rausli and vary in quality between the two extremes."

In assessment no difference was made between *dakar* and *rausli*, but both *bhur* and *dahr* (a harder kind of *dakar* yielding crops of coarse rice, and failing that nothing) were taken into consideration in assessing the villages where these soils were found. The term *tibbi* was confined to the cultivated sand-hills of the Powadh circle.

The standard
of assessment.

The standard of assessment has been fixed by Government as half the rental or net assets calculated on the basis of rents either in cash or produce paid by tenants-at-will to their landlord.

Rents both in cash and in kind are found in all parts of the Karnal district, and in most circles it was possible to ascertain the standard of assessment by reference to both guides.

Estimate of
half-net-as-
sets standard
by cash ren-
tal

A basis for the cash rent estimate was obtained from the statements of rents drawn up after the entries for each holding had been carefully attested during the preparation of the records. These rents were analyzed under the following heads:—

- (a) Rents paid by mortgagors to mortgagees.
- (b) Rents paid by tenants-at-will to mortgagees.
- (c) Rents paid by tenants-at-will to owners.

Rents under head (a) were neglected as being complicated by questions of interest due on the mortgage and by other relations between the original owner and the mortgagee. The Settle-

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ment Officer's proposals were based entirely on rents coming under head (c), which he considered gave the truest idea of the real letting value of the land free from all suspicion of rackrenting for immediate profit. This list was carefully scrutinized, and all rents were eliminated which were believed to be falsely stated, rents specially low on account of relationship or services rendered by the tenants, or for land brought under cultivation for the first time as well as the high rents of fruit gardens, or land leased for special garden crops, and all zabti rents. The result was considered the normal rent. As owners generally keep the best land for their own cultivation, it could be safely assumed that land cultivated by the owners themselves could be rented at these normal rents. Accordingly, to ascertain the total rental of a circle, the normal rents were applied to the recorded cultivated area, an allowance, which usually amounted to 15 per cent. on unirrigated, to 10 per cent. on irrigated land, was made for land unlet owing to fallows and uncollected rents.

The Financial Commissioner, however, considered that there was no justification for omitting the rent on land let by mortgagees to tenants-at-will, because these rents were voluntarily paid by the tenants, and really represented his estimate of the letting value of the land. Such rents were usually higher than those paid to owners, and their omission led to a result below the truth. The Financial Commissioner, therefore, increased the pitch of the Settlement Officer's normal rents by including in them rents paid by tenants-at-will to mortgagees, and his action was approved by Government.

The Financial Commissioner was also of opinion that a reduction of 10 per cent. should be allowed from these increased normal rents to cover the cost of collection and management and to provide a margin of safety. To this course, however, Government did not agree. The Settlement Officer had applied his rent rates to the recorded area of each soil. The Financial Commissioner, however, applied his higher rates to an average irrigated area of well and canal land which was considerably lower than the recorded area.

The assessment standard by cash rents therefore amounts to the result of applying $\frac{1}{2}$ the normal cash rent as enhanced by the Financial Commissioner (less the deduction for fallows and uncollected rents) to an average irrigated area.

The calculation of the assessment standard to be deduced from rents in kind is more complicated. The first factor to be determined is the area of crops harvested in a circle. From this

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sets standard
by cash ren-
tal.Estimate of
half-net-as-
sets by rents
in kind.

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Estimate of
half-net-as-
set by rents
in kind.

(a) The area
of crops.

area must be deducted crops grown solely for fodder and the outturn of the remainder must be estimated. Applying to this result the sanctioned commutation values, the total value of the crops is arrived at. From this amount must be deducted the value of customary payments to village menials which are made before the landlord can take his share of the produce, one-half of which is the Government standard of assessment.

Throughout the district the area of crops was taken to be the average area matured during the period 1900-05. This cycle may be considered as generally representing the ordinary agricultural condition of the district. One excellent season (1900-01) was balanced by one extremely bad (1901-02), the harvest of one year (1902-03) was indifferent and two were very fair (1903-05). The choice of these years was, if anything, advantageous to the zamindars, especially in the Nardak circles of Karnal and Kai-thal, where irrigation expanded considerably after 1905. To enable allowance to be made for this improvement, statistics were also given for the year following 1905 up to the date of submitting the report.

(b) Deduc-
tions for
fodder.

Crops grown solely for fodder such as *chari*, *gowara* and *melhi* were excluded from calculation. No deduction was made for crops cut green, but on the other hand nothing was added to the estimate on account of the share of straw which the owner usually, but not invariably, takes along with his share of grain.*

(c) Outturn
of crops.

The estimates for this part of the calculation were based on the outturns adopted at the last settlement, those used in the recent settlements of adjoining tracts, the results of crop experiment, and the Settlement Officer's enquiries during village inspections. Since the settlement of Panipat and the Karnal pargana the iron sugar-crushing mill had been universally adopted, and it was therefore possible to assume a higher outturn for *gur* than was possible 30 years ago. The decrease of heavy canal irrigation and of jungle floods justified a decrease in the assumed outturn of rice, the cultivation of which receives less attention than formerly. Crop experiments were conducted over a considerable area, and were of assistance in checking assumptions, but in most cases the yields assumed were those employed for similar calculations at last settlement.

*The Bet Markanda circle forms an exception to this statement. There Mr. Kennaway took into account the landlords' share of the valuable wheat straw.

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The outturns actually adopted in this settlement for the principal crops are given below in maunds to the acre :—

Statement showing the yields in maunds of principal crops.

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tion.

	Wheat.	Gram	Ziri.	Maize.	Jowar.	Cotton.	Cane.	(c) Outturn of crops.
Bangar ...	11½	12½	13	13	7	7	26	
	8	8	9	7	5	4	15	
Khadar ...	13½	11½	12	13	7	7½	27½	
	7	8	9	7	4	4	15	
Khadir Indri and Karnal.	11½	11	12	12½	7	6	7	
	5	6	7½	7	2½	6	7	
Bangar Indri ...	13½	11	9	15	7			
	5	6	7½	8	4	6	7	
Bangar ...	13½	11	13½	15	7			
	5	6	7½	8	4	6	7	
Nardak Indri and Karnal.	12½	11	12	14½	7			
	5	6	7½	8	3	6	7	
Bet Markanda	12	10	10	12½	3½			
	7	6	7½	7½	2	6-1	7	
Khadar ...	12	10	10	12½	3½			
	6	6	7½	7	2½	6-4	6-4	
Bangar ...	12½	10	10	15	3½			
	6	7	7½	8	2½	6-8	6-12	
N. Chachra ..	12	8	10	14				
	6	7	7½	7	2½	6-4	6-12	
S. Chachra ...	11	7	10	12½	4½			
	5	5	7½	7	3	5-12	6-4	
Nardak ...	12	12	12	12½	6	7	24	
	5	6	6	10	4	3½	24	
Bangar ...	12	12	12	12½	6	7		
	5	6		10	4	3½		
B. Pehowa ...	12	12	12	12½	6	6	18	
	5	6	5	10	4	3	18	
Saili ...	11	12	12½	12½	6	6		
	6½	7	8	10	4	3	24	
Andarwar ...	15		10	12½	6	7		
	5	6		10	4	3½		
Powadh ...	12	6	10	15	5	7½		
	5	6	6	12½	1	14	24	

Mr. Douie, however, when reviewing the Karnal Report as Settlement Commissioner, doubted whether the estimates of unirrigated jowar and gram, and perhaps wheat, were not too low. He

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Administration.2) Valuation
of produce.

therefore added 20 per cent. to the half-net-assets estimate for barani crops in the Khadar and Indri Bangar, 15 per cent. in the Nardak, and 10 per cent. in the Karnal Bangar.

For certain crops cash rates per acre were taken, to $\frac{1}{2}$ of which Government is entitled :—

Cotton.	Sugarcane.	Vegetables.	Chillies and spices.	Tobacco.	Poppy.	Indigo.	Sanni and hemp.
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs.	Rs. A. P.	Rs. A. P.	Rs.	Rs.
6 1 0	6 12 0	1 8 0	16	5 1 0	6 12 0	7	7
7 4 0	9 10 0	7 0 0	...	16 0 0	..	...	...

No valuation of the straw was made. It was considered that the whole might be set off against the large expense incurred in the feed of bullocks.

(e) Deductions for
village
menials.

The principal menials paid from the common heap are the Chamar, who provides the leather work for the agriculturists, the Badhi and Lohar, who furnish respectively the wood and iron work, and in the Khadir tracts the potter, who makes the earthen pots required for the Persian wheel. The value of the sheaves taken by the reaper as his daily wage has also to be allowed for, as well as doles by way of charity to Brahmins and Fakirs. In the Karnal tahsil 12 per cent. was allowed to cover the cost of these customary payments, stress being laid on the dearth of labour and character of the Rajput population. In Panipat and Kaithal only 10 per cent. was deducted. Mr. Kennaway in Thanesar allowed as much as 12 to 14 per cent.

(f) Owner's
share of the
produce.

The owner's share of the produce remaining after the deduction for fodder crops and menials' dues varies throughout the district. One-half or two-fifths is usual in the rich wheat lands of the Bet Markanda and Thanesar Khadar. The one-third share is almost universal in the Panipat Khadar and the Bangar circles of Karnal and Panipat, one-half and two-fifths being taken only when the landlords have helped to defray some of the minor expenses of cultivation or have worked with the tenant in the field. The one-fourth share is the rule in the Nardak tract and generally throughout the Kaithal tahsil. On canal-irrigated

land in Panipat and also in the Panipat Khadar the owner taking one-third of the produce has also to pay one-third of the land revenue cesses and canal rates, and if he takes one-third of the fodder has to provide a similar share of the seed. For sugarcane the tenant usually pays at a rate lower than that prevailing in the village for other crops.

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tion.
—

In Panipat town and in some villages of the Panipat Khadar and Karnal pargana, the owner takes a rent in grain usually fixed at so many maunds of maize and wheat in the proportion of one-third maize and two-thirds wheat. This tenure is known as "Ijara." To ascertain the theoretical half net-assets standard in this case all that is necessary is to calculate the value of the total amount of grain which is paid as rent according to the sanctioned commutation prices.

Rents in
grain.

The half-net-assets standards calculated by cash and kind rents respectively were then compared and checked with the result given by enhancing the existing demand in proportion to the percentage of increase in the cultivated area and the rise in prices. A further check was afforded by the statistics of the price obtained for land at various periods since last settlement. The price per rupee of land revenue assessed on the land sold, or, in other words the number of years' purchase which the buyer of land was prepared to pay, was worked out for quinquennial periods. It was assumed that the profit which an intending purchaser of land expected was not less than 4 per cent., and that he did not wish to pay more than 25 times the annual profit for the land. The proportion by which the number of years' purchase exceeded 50 indicated the extent to which the existing revenue might be enhanced.

Checks on the
correctness of
the half-net-
assets estimate.

A suitable assessment for the circle, and rates for each class of soil were then proposed, and at the same time to assist the distribution of revenue over villages crop rates were devised on the basis of the rates given by the produce estimate.

Actual assess-
ment imposed.

The principles which should govern the assessment of canal-irrigated land were enunciated by Sir James Wilson as Financial Commissioner in his Review of the Gohana Tahsil Assessment Report, and his conclusions were accepted by the Punjab Government. Sir James Wilson's proposals practically amounted to continuing the policy followed since 1878 in the districts irrigated by the Western Jumna Canal, under which the fixed land revenue represents the assessment the land can pay when unirrigated, and whatever is assessable on irrigation is

Assessment of
canal lands as
proposed by
the Punjab
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proposed by
the Punjab
Government.

taken in the form of a fluctuating rate on actual irrigation. The difference between the rent rates of irrigated and unirrigated land clearly indicated what was the increase of net profits in the shape of rent to a land-owner from the use of canal water. Enhancements of the total charges for the use of canal water were made to amount as nearly as possible to half this increase of net profits. But at the same time it was ordered that the rate of the fixed assessment on canal land should exceed that for unirrigated land. Because even though the excess profits of canal irrigation were assessed by a fluctuating canal advantage rate this did not put on terms of equality land which can never be irrigated and land which is commanded by the canal and can be irrigated when the owner wishes. A higher fixed land revenue on land irrigated by the canal allows for the greater security of its crop in bad seasons ; for in a year of drought it will have at least some crop and some fodder and high prices will be obtained for its surplus produce. Beyond the differentiation made at last settlement there were practically no guides as to the extent to which the rate of the fixed nahri assessment should exceed that on unirrigated soil. Some indication, however, of the amount to be set apart as a fluctuating demand was afforded by the average collections of owner's rate, which represent the fluctuating demand imposed on the owners and now transferred by them to the tenants.

The Government
of India
orders
the Government
of India
to canal
assessment.

The Government of India, however, disapproved of the proposals to take a portion of land revenue assessment in the form of an addition to the canal water rate, and consequently no enhancement has been made in the total rates paid for canal irrigation. But in their letter No. 256, dated 19th November 1909, the Punjab Government ordered that the Nahri rate sanctioned should not be applied to any average irrigated area, but to the area recorded as Nahri in the record-of-rights. The result of this order was to increase the sanctioned assessment of the district by Rs. 15,920. Thus the only wet assessment imposed on Nahri land as a result of settlement operations was the portion of the fixed demand representing the difference in circle rates for nahri and barani respectively.

The following
table shows
the results
of the
reassessment.

The following table shows the total results of the reassessment. The demand actually announced is compared below with the demand of the last year of the expiring settlement and the demand sanctioned by the Government for each tahsil together with the additional canal assessment necessitated by the order conveyed in the Punjab Government letter No. 256, dated 19th November 1909. Of this demand, Rs. 67,980 must be con-

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sidered a fixed assessment on canal land, that is to say the difference in circle rates for Nahri and Barani respectively :—

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AdministrationTotal results
of reassess-
ment.

1	2	3	4	5	6	7
Tahsil.	Circle.	Old fixed demand.	Sanctioned new fixed demand.	Final new demand.	Increase per cent. of column 5 on column 3.	REMARKS.
		Rs.	Rs.	Rs.		
PANIPAT.	Panipat town ...	25,605	32,000	32,805	23	
	Khadar ...	1,20,034	1,50,000	1,49,974	25	
	Bangar ...	1,82,912	1,94,800	1,96,000	20	
	Total tahsil ...	3,08,551	3,76,800	3,78,779	23	
KARNAL.	Khadar Karnal ...	48,752	58,000	59,005	21	
	Karnal town ...	8,093	13,000	13,000	51	
	Bangar Karnal villages ...	32,747	41,500	42,600	30	
	Nardak Karnal ...	33,862	52,000	53,212	58	
	Khadar Indri ...	80,915	85,000	88,048	8	
	Bangar Indri ...	49,875	54,000	55,315	11	
	Nardak Indri ...	23,901	27,000	27,555	15	
	Total tahsil ...	2,77,945	3,30,500	3,38,738	22	
THANESAR.	Khadar ...	27,400	31,142	31,035	13	
	Bangar ...	41,088	42,746	42,674	4	
	Bet Markanda ...	94,464	1,20,471	1,19,960	27	
	North Chachra ...	51,070	65,112	64,994	27	
	South Chachra ...	26,492	35,251	35,145	33	
	Total tahsil ...	2,40,494	2,94,722	2,93,808	22	
KAITHAL.	Nardak ...	53,756	1,14,400	1,14,225	112	
	Bangar Kaithal ...	69,075	1,16,220	1,16,735	69	
	Bangar Pehowa ...	12,067	15,000	15,480	28	
	Nailli ...	61,485	61,500	62,675	2	
	Andarwar ...	16,234	16,000	16,630	2	
	Powadh ...	28,368	31,000	32,070	13	
	Total tahsil ...	2,40,965	3,54,120	3,57,815	49	
	TOTAL DISTRICT ...	10,67,955	13,56,142	13,69,135	28	

In villages where the increase was large, the whole demand was not imposed immediately. Part of the assessment was deferred for 5 and in some cases for 10 years.

ASSESSMENT IN TAHSILS.

(a) Panipat.

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Administration.
General.

The whole tahsil is wonderfully secure, for, in addition to its resources in the way of irrigation, it enjoys an average rainfall of 23 inches, the annual fall having been below this figure in only 7 of the 22 years ending with 1906-07. In such years the wells are worked to their utmost capacity in the Khadar, and all the canal water that can be got is utilized in the Bangar. Few suspensions and no remissions of land revenue were necessary on account of drought during the term of the expiring settlement.

Cultivation
and irrigation.

Cultivation increased by 13 per cent., in the Khadar and by 15 per cent. in the Bangar, since last settlement. In the former circle the number of wells in use grew from 2,416 to 2,770, with a corresponding rise of 15 per cent., in the area irrigated from them, which, in view of the care taken to manure and practically to make the soil of the Khadar well lands, is a substantial gain. The land that has been brought under the plough in the Bangar is of good quality, but there has been no increase of irrigation in the circle. The Panipat Bangar is one of the favoured tracts that could afford to endure a reduction, but, while gaining by the stoppage of water-logging, the tract now receives less canal water than it did. The small area irrigated from wells in the Bangar at last settlement has become smaller still, which shows that the restriction of canal water has not yet been felt to such an extent as to induce the cultivators to bring old wells into use. Numbers of such wells might yet be brought into work, though not without difficulty and expense. But there can be no doubt that these would be increased if there was a real want of water for irrigation.

Population
and cattle
stock.

The population is very dense, being estimated at 717 per square mile of cultivation in the Khadar and 578 in the Bangar. But it is no denser than at settlement, and the average size of proprietary holding (7.4 cultivated acres for the tahsil) is not minutely small. The Bangar Circle has suffered severely from plague since the last Census, and its population is now less than at last settlement. The Khadar has suffered little. The figures for cattle are satisfactory. The decrease in ploughs in the Bangar is curious, considering that cultivation has increased in the circle.

The selling price of land is high in the Khadar, especially in Panipat town. In terms of land-revenue the price has risen from 47 fold to 84 fold, and the mortgage money from 40 to 47 fold in Panipat town lands, while in the rest of the Khadar circle the sale price has risen from 33 to 42 fold, though the mortgage consideration has remained stationary at about 50 times the land revenue or has been decreased. In the Bangar the sale money was from 27 to 50 fold in 1895 - 1900, but has since dropped to 22 fold. The mortgage money is 50 times the land revenue in the last 5 years compared with 43 in the first. In the matter of mortgages the money-lenders, among whom Brahman Bohras from Rajputana are notorious, are the only holders, and they hold land in mortgage from every agricultural tribe. In sales the agricultural community have held their own, and the sale of the Skinner estates has added somewhat to the possessions of the old proprietors, though more to those of money-lending classes.

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tion.

Transfers.

The chief features of the history of the cropping of the tahsil are the decrease of rice cultivation, marking diminished swamping and the large development of cotton and fodder crops since last settlement. The area under wheat has remained steady, while that under cane, though more subject to fluctuation, has somewhat increased in both circles. The nature of the cropping in the Khadar emphasises the fact that it is a well circle and a rich one growing valuable crops. The Bangar cropping, thanks to the large proportion irrigated, approximates to it. Higher rates of yields in Panipat than in Karnal are justified by the greater fertility of the tract.

Crops and
yields.

More than half of the land in the Bangar, and more than two-thirds in the Khadar are cultivated by the proprietors themselves. But a fair idea of the renting value of the whole can be obtained from the cash rents paid on one-fifth of cultivation in the Khadar and one-twelfth in the Bangar. On one-twelfth of the Bangar cultivation and on nearly 5 per cent. of the Khadar, rents are paid in kind, and the produce estimate affords a useful check on the inferences drawn from cash rents. At last settlement Mr. Ibbetson wrote that true rent was unknown in the tract. His rent rates of Rs. 4-1-0 and Rs. 3-7-0 per acre in the Khadar and the Bangar were based on acreages of 961 and 536, respectively, paying partly cash and partly fixed grain rents. True competition cash rents now average Rs. 6-2-0 per cultivated acre in the Khadar and Rs. 4-13-5 in the Bangar. The Financial Commissioner included rents paid by tenants-at-will to mortga-

Tenancy and
cash rents.

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gees in his calculation of normal rents with the following results :—

Revenue
Administration.Tenancy and
ash rents.

			KHADAR EXCLUDING PANIPAT TOWN.		BANGAR.	
			Area on which rents are paid.	Average rent paid.	Area on which rents are paid.	Average rent paid.
				Rs. A. P.		Rs. A. P.
Chahi	...	...	5,015	7 3 0	332	8 7 0
Nahri	...	...	...	...	1,429	5 11 0
Barani	...	...	1,645	5 0 0	2,384	4 4 0

About 5 per cent. were allowed on unirrigated land in the Bangar to cover uncollected rents and fallows. For the purpose of calculating the half-net-assets estimate by cash rents the following rates were used, applied in the case of Chahi and Nahri land to actual average irrigation :—

			KHADAR EXCLUDING PANIPAT TOWN.			BANGAR.		
			Area in acres.	Half-net-assets rate.	Resulting assessment.	Area in acres.	Half-net-assets rate.	Resulting assessment.
				Rs. A. P.	Rs.		Rs. A. P.	Rs.
Chahi (actually irrigated)			37,220	3 8 0	1,30,370	4,000	4 3 0	16,750
Nahri (actually irrigated)			...	..	...	43,000	2 12 0	1,20,938
Barani and Sailab	...		20,824	2 8 0	52,060	65,779	2 0 0	1,31,558
Bhur	...	...	1,754	1 8 0	2,631	...	...	...
Total	...		59,798	...	1,84,981	1,12,779	...	2,69,246

The produce estimate in the Khadar amounted to Rs. 2,00,991, and in the Bangar as calculated by the Financial Commissioner to Rs. 2,79,720.

Half-net-
assets stand-
ard and assess-
ment.

The half-net-assets standard obtained by a comparison of these two estimates was considered to be about Rs. 1,94,000 in the Khadar. In the Bangar the similar standard was taken by

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the Financial Commissioner to be Rs. 2,80,000 which represented a full wet land revenue assessment, on the assumption that the total fluctuating canal charges remained practically as they were. Of the amount thus estimated for the Bangar Circle the Financial Commissioner proposed to take Rs. 1,90,000 as a fixed dry demand, being an increase of 17 per cent. over the old fixed demand of Rs. 1,62,912. He considered that Rs. 48,000 should be added to the existing fluctuating canal charges by increasing the scheduled rates for certain crops. The total of the fixed dry assessment, together with the proposed addition to the fluctuating canal charges, amounted to Rs. 2,38,000 or 85 per cent. of the half-net-assets estimate. In the Khadar the Financial Commissioner proposed a fixed assessment of Rs. 1,50,000, or 77 per cent. of the half-net-assets estimate. These proposals were accepted by the Punjab Government, but enhancements of canal rates were recommended to the Government of India on a lower scale than was contemplated by Sir James Wilson.

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Revenue
Administra-
tion.
—
Half-net-
assets stand-
ard land assess-
ment.

As explained above the proposals of the Punjab Government were not accepted by the Government of India. No increase was made in the canal water rates, and the sanctioned demand was limited to Rs. 1,50,000 for the Khadar (excluding Panipat town), Rs. 32,000 for Panipat town and Rs. 1,90,000 for the Bangar. In accordance with the orders conveyed in Punjab Government letter No. 256, dated 19th November 1909, an addition of Rs. 4,800 was made to the amount previously sanctioned as the fixed assessment for canal land. The total wet assessment on land, i.e. the difference in circle rates for nahri and barani, respectively, is calculated to amount to Rs. 19,184. As most canal villages distributed the revenue by an all-round rate, this calculation is merely nominal.

The assessment actually imposed in each circle was Rs. 32,805 in Panipat town, Rs. 1,49,974 in the rest of the Khadar, and Rs. 1,96,000 in the Bangar circle.

(b)—Karnal.

The assessment orders for the Karnal tahsil may be summarized under the following heads—

(i) Pargana Karnal settled by Mr. Ibbetson 30 years ago—

- (1) Karnal Bangar.
- (2) Karnal town lands.
- (3) Karnal Khadar.
- (4) Karnal Nardak.

Assessment
circles

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Administration.Karnal
Bangar
excluding
Karnal town.)

(ii) Pargana Indri settled by Mr. Douie 20 years ago—

(5) Indri Khadar.

(6) Indri Bangar.

(7) Indri Nardak.

This circle is very similar to the Panipat Bangar. Since Mr. Ibbetson's settlement in 1880, its condition has very much improved owing to the realignment of the canal and the substitution of a dry fixed assessment and an owner's rate on area actually irrigated for the previous wet fixed assessment. Except for a comparatively small area, the water-logging from which the tract suffered so much has ceased and the health of the people greatly improved. Population increased by over 7 per cent. during the currency of the last settlement, and cultivation by 16 per cent. The area recorded as irrigated by the canal decreased from 19,951 acres to 16,054, but, with regard to the previous evils due to over-irrigation, this is a matter for congratulation, and in a dry year half the cultivated area is still actually irrigated by the canal. For 7 per cent. of the total cultivated area figures existed on which to base a cash rent estimate. The *chahi* rented area is small and includes excellent land near Karnal, so that it was not safe to apply the high *chahi* rent as it stood to the whole circle. The cash rents for the purposes of the estimate were taken as follows :—

Rent per acre.

			Rs.	A.	P.
Chahi	...	...	6	0	0
Nahri	...	...	4	12	0
Barani	...	...	3	2	0

These rents were much lower than in the Panipat Bangar. The resulting rates were applied to the average area actually irrigated in a typical series of years. The area actually irrigated from wells on the average of the 13 years, 1895—1908, which included both wet and dry years, was 777 acres, and the high *chahi* rent-rate was applied to only 700 acres.

The average area actually irrigated by the canal in the 8 years after 1900, when the remodelling of distributaries may be considered to have taken effect, was only 11,633 acres, so that it was not considered safe to apply the high *nahri* rent to more than 12,000 acres. The remaining areas were treated as *barani*. The half-net-asset estimate based on rents paid in kind gave the assessable demand as Rs. 46,682. But the Financial Commissioner

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discarded the produce estimate as untrustworthy, and assumed, on the basis of the cash rents, that a full fair wet assessment of the circle would be about Rs. 58,000. His proposals for the fixed dry land revenue of this circle were :—

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—
Revenue
Administration
—

Soil.	Area in acres.	Revenue rate per acre.	Resulting assessment.	Karnal Bangar (excluding Karnal town).
		Rs. A. P.	Rs.	
Chahi (actually irrigated)	700	2 8 0	1,750	
Nabri (do'to)	12,000	1 8 0	18,000	
Barani	17,883	1 2 0	20,118	
Total	30,583	...	39,868	

The Settlement Officer was instructed to aim at a fixed dry assessment for the circle of Rs. 40,000, an increase of 22 per cent. over Mr. Ibbetson's dry assessment of Rs. 32,747, while cultivation had increased by 16 per cent. and prices risen by more than 22 per cent. The rates proposed by Financial Commissioner compared as follows with those employed by Mr. Ibbetson for his dry assessment in this circle :—

Soil.	Half-net-assets rates now estimated.		Mr Ibbetson's dry rates.		Rates proposed by the Financial Commissioner.	
	Panipat.	Karnal.	Panipat.	Karnal.	Panipat.	Karnal.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Chahi	4 3 0	3 0 0	2 12 0	2 4 0	3 8 0	2 8 0
Nabri	3 4 0	2 6 0	1 13 0	1 5 0	1 13 0	1 8 0
Barani	1 14 0	1 9 9	1 6 0	1 1 0	1 8 0	1 2 0

In accordance with the orders conveyed in Punjab Government letter No. 256, dated 19th November 1909, an addition of Rs. 1,500 was made to the previously sanctioned demand as the fixed assessment of canal land. The actual assessment imposed on this circle was Rs. 42,600.

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III. C.Revenue
Administration.Karnal town
and.

Of the lands included in mauza Karnal no less than 40 per cent. are leased on true competitive cash rents, so that there was an unusually good basis for a cash rent estimate. The average area actually irrigated from wells was only about 1,400 acres against the recorded *chahi* area of 2,084 acres. In the case of *nahri* the actual irrigation of the last two years greatly exceeded the recorded *nahri* area, owing to double cropping, and the high *nahri* cash-rent-rate could not be applied to more than the recorded area. The half-net-assets estimate therefore was—

Soil.				Area in acres.	Half-net-assets rate.	Resulting estimate.
					Rs. A. P.	Rs.
Chahi (actually irrigated)	...	...	...	1,400	5 0 0	7,000
Nahri (recorded area)	...	...	...	1,850	4 8 0	8,325
Farani	...	...	...	3,548	1 10 0	5,766
Total				6,798	...	21,091

This estimate may be roughly checked as follows :—40 per cent. of the cultivated area actually pays cash rents aggregating Rs. 17,353, and if it is assumed that the remaining area could be let at similar rates, the renting value of the whole estate is Rs. 43,382.

The old fixed assessment was only Rs. 8,093,—an extraordinarily light assessment. In the face of the rent statistics and in fairness to the owners of outlying villages and to the Mandal jagirdars, the Financial Commissioner raised the proposed fixed assessment of Rs. 11,500 to Rs. 13,000.

No addition was made to the fixed assessment of canal land in this estate, as the area recorded as canal irrigated had already been fully taken into account.

The average area actually irrigated on the average of the 13 years 1895—1908 was 13,800 acres, and 14,000 acres were assumed as assessable to the *chahi* rate. The *nahri* area is small, the recorded area being only 2,296, acres. For a cash-rent esti-

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mate an unusually good basis existed in the cash rents. The figures are as follows :—

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Administra-
tion.
—
Karnal
Khadar.

SOIL.	NORMAL RENTS PAID TO OWNERS.		RENTS PAID BY TENANTS-AT-WILL TO MORTGAGEES.		TOTAL RENTS.		
	Area.	Rent paid.	Area.	Rent. paid.	Area.	Rent paid.	Average rent per acre.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs. A. P.
Chahi ...	3,511	21,154	1,026	6,801	4,537	27,955	6 2 0
Nabri ...	356	2,189	60	379	416	2,568	6 3 0
Jumna sailab ...	452	1,730	5	30	457	1,760	3 14 0
Barani ...	1,321	5,143	245	1,898	1,566	6,541	4 3 0

About 10 per cent. was deducted on sailab and barani land to allow for fallows and uncollected rents ; and, as the rents on sailab and barani were much the same, these classes were lumped together. The resulting half-net-assets cash-rent estimate was as follows :—

Soil.			Area in acres.	Half-net-assets rate.	Resulting estimate.
				Rs. A. P.	Rs.
Chahi (actually irrigated)	...	...	14,000	3 0 0	42,000
Nabri	...	...	2,296	3 0 0	6,888
Barani and sailab	...	...	15,218	1 14 0	28,534
Total cultivated			31,514	...	77,422

The half renting value of the whole circle was estimated at Rs. 75,000 by the Financial Commissioner. The old assessment was Rs. 4,875. Population and plough cattle have increased in the last 30 years, and the circle is, as a whole, prosperous and secure. The fixed assessment proposed by the Financial Com-

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III. C.

missioner and accepted by Government, and its distribution by rates are shown below :—

Revenue
Administra-
tion.Karnal
Khadar.

	Area in acres.	Mr. Ibbetson's revenue rates.	Half-net- assets rates.	Revenue rates.	Resulting assessment.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs.
Chahi (actually irrigated).	14,000	2 2 0	3 0 0	2 6 0	33,250
Nahri (ditto)	2,296	...	3 0 0	1 10 0	3,731
Barani and sailab ...	15,218	1 4 0	1 14 0	1 6 0	20,925
Total cultivation ...	31,514	...	...	...	57,906

The Settlement Officer was instructed to aim at a fixed dry assessment of Rs. 58,000, which gave an increase of 19 per cent. on the present fixed demand, while the total fixed assessment *plus* the increase of Rs. 1,000 in the fluctuating canal charges amounted to 79 per cent. of the half-net assets estimate of Rs. 75,000. As at last settlement, this circle has been assessed at considerably lower rates than the Panipat Khadar, but the rents here are considerably lower than they are in that circle.

No addition was made to the fixed assessment of canal land in this circle, as the amount involved was considered too small to be taken into account. The assessment actually announced was Rs. 59,005, or an increase of 21 per cent. on the old demand.

Karnal
Nardak.

In Mr. Ibbetson's time the Karnal Nardak was a high arid tract, with water at great depths, having only 27 per cent. of its area cultivated and hardly any of it irrigated, and being chiefly occupied by cattle-grazing Rajputs. Since then its agricultural condition has been revolutionized by the realignment of the Western Jumna Canal and the extension of irrigation to this circle, though even now it is covered with dense *dhak* jungle, varied by stretches of cultivation. Forty-four per cent. of the total area is under cultivation, and 15 per cent. of the total area (34 per cent. of the cultivated area) irrigated by the canal. Population has increased by more than 30 per cent. since 1881, and signs of prosperity are everywhere apparent. Cultivation and irrigation are certain to extend still further during the next 30 years. The Financial Commissioner assumed that 22,000 acres were likely to be irrigated in future from the canal on an average of years. The area recorded as chahi was 2,542

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acres, but well irrigation has been decreasing, owing to the introduction of the canal, and the Financial Commissioner assumed only 2,000 acres as the assessable average of this class of soil. The remaining area was treated as barani. The rent rates vary greatly, being full rents near Karnal, and not yet full rents in the newly irrigated villages further west. The Financial Commissioner's estimate of the half-net-assets of the cultivated land, based on cash rents, was as follows:—

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Administra-
tion.

Karnal
Nardak.

Soil.	Area in acres.	Half-net-assets rate.	Resulting estimate.
		Rs. A. P.	Rs.
Chahi (actually irrigated) ...	2,000	1 14 0	3,750
Nahri (ditto) ...	22,000	1 14 0	41,250
Barani ...	41,576	0 14 0	36,379
Total cultivation ...	65,576	1 ...	81,379

It was considered that the produce estimate of Rs. 63,000 failed to take into account the spread of irrigation, and half the present renting value of the cultivated land was therefore estimated at Rs. 80,000. The Financial Commissioner thought that in assessing for 30 years this rapidly developing tract, the estimate of present half-net-assets might be safely approached. The fixed assessment sanctioned was as follows:—

Soil.	Area in acres.	Mr. Ibbetson's re- venue rate.	Half-net-assets rate.	Revenue rates pro- posed by the Financial Com- missioner.	Resulting assessment.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs.
Chahi (actually irri- gated).	2,000	1 14 0	1 14 0	1 8 0	3,000
Nahri (ditto)	22,000	0 9 0	1 14 0	0 14 0	19,250
Barani ...	41,576	0 9 0	0 14 0	0 10 0	25,985
Total cultivation ...	65,576	...	...	...	48,235
Grazing area ...	60,391	0 0 8	...	0 1 0	3,774
Total ...	...	...	...	...	52,009

The Settlement Officer was instructed to aim at a total fixed dry assessment of Rs. 52,000. The actual assessment

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imposed was Rs. 53,212,—an increase of 58 per cent. over the old fixed assessment of Rs. 33, 662. This assessment is light in present circumstances, and will probably become very light as cultivation and irrigation develop. No addition was made to the fixed assessment of canal land in this circle, as the amount involved was considered too small to be taken into account.

The improvement since Mr. Douie's settlement 20 years ago has not been so great as in the Karnal Nardak. But the cultivated area has increased by 10 per cent., and the recorded chahi area by 10 per cent., though the number of wells in use has fallen off slightly. Canal irrigation has been introduced since last settlement, more than a fifth of the total cultivated area being now classed as canal irrigated. The area to be assessed as *chahi* was assumed to be 2,200 acres. The total recorded *nahri* area was 7,680 acres, and on the average of the three years 1905—1908, the average matured *nahri* area was 6,308 acres, with 12 per cent. allowance for *kharaba*. Seven thousand acres were therefore taken as the actual average irrigation at present. Rather more than half this area is dependent on the Chautang Canal, irrigation from which is charged only at occupier's rates, or only two-thirds of the usual total of fluctuating canal charges. The area on which cash rents are paid was very small, and the rents paid in the adjoining and similar Karnal Nardak were taken as a guide, the *barani* rent rate being reduced from Re. 1-12-0 to Re. 1-8-0, to allow for the inferior soil and the precarious cropping, especially on the *dahr* cultivation. The estimate of the half-net assets by cash rents was therefore as follows:—

Soil.	Area in acres.	Half-net-assets rate.	Resulting estimate.
		Rs. A. P.	Rs.
Chahi (actually irrigated) ...	2,200	1 14 0	4,125
Nahri (ditto) ...	7,000	1 14 0	13,125
Barani ...	23,535	0 13 0	17,652
Total ...	82,735		34,902

The kind rent estimate of Rs. 28,888 was rejected, being based on low prices and low assumed outturns, and on the areas of

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1900-05, when only 3,488 acres of matured nahri crops were grown. A safe estimate of the half net renting value of the cultivated area of the circle under present circumstances was held to be Rs. 32,000. The rates sanctioned for a fixed dry assessment were as follows:—

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III. C.
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Revenue
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tion.

Indri Nardak,

Soil.	Area in acres.	Mr. Donie's revenue rate.	Half-net-assess rate.	Revenue rate proposed by Financial Commissioner.	Resulting assessment.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs.
Chahi (actually irrigated).	2,200	2 0 0	1 14 0	1 12 0	3,850
Nahri (ditto)	7,000	...	1 14 0	0 12 0	5,250
Barani ...	23,535	0 10 0	0 12 0	0 10 0	14,709
Total cultivation ...	32,735	...	...	...	23,809
Grazing area ...	35,303	0 0 6	0 1 0	...	2,202
Total ...	...	...	...	...	26,015

The Settlement Officer was instructed to aim at a fixed assessment of Rs. 26,000 and was allowed to put a lower rate on *dahr*, as the barani rate could safely be raised to 12 annas or more on the best unirrigated land. The actual assessment as announced was Rs. 27,555,—an increase of 15 per cent. on the old demand. No addition was made to the fixed assessment of canal land in this circle, as the amount involved was considered too small to be taken into account.

62. This circle is comparatively stagnant. Population and wells in use have fallen off, but there has been an increase in cultivation of 6 per cent., and a considerable extension of canal irrigation, and prices have risen by over 25 per cent. The recorded chahi area is 11,589 acres. The actual average area annually irrigated in the thirteen years 1895-08 was 7,108 acres and in the three years 1905-08, of which two were very dry years, 7,827 acres. The Financial Commissioner took 7,200 acres as the assessable area. The recorded nahri area was 2,270 acres: the actual cropped nahri area of the three years, 1905-08, averaged 2,045 acres. Two thousand acres were assumed as the

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gar.

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assessable area. The following rates were taken for the half-net-assets based on cash rents :—

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III. C.
Revenue
Administra-
tion.
Indri Bangar.

Soil.	Area in acres.	Half-net-assets rate.	Resulting estimate.
		Rs. A. P.	Rs.
Chahi	7,200	2 8 0	18,000
Nahri	2,000	2 0 0	4,000
Canal sailab	1,116	2 0 0	2,232
Barani	33,298	1 4 0	41,622
Total cultivation ...	43,614	...	65,854

The revised kind rent estimate was Rs. 55,405; but, as it was based on low outturns and prices, and on a low estimate of canal irrigation, the half-net-assets were placed at Rs. 62,000. The old assessment was Rs. 49,875. The following fixed dry assessment was sanctioned :—

Soil.	Area in acres.	Revenue rate.	Resulting assess- ment.
		Rs. A. P.	Rs.
Chahi (actually irrigated) ...	7,200	2 4 0	16,200
Nahri (ditto) ...	2,000	1 4 0	2,500
Canal sailab	1,116	1 12 0	1,953
Barani	33,298	1 0 0	33,298
Total cultivation ...	43,614	...	53,951

The Settlement Officer was instructed to aim at a fixed demand of Rs. 54,000, and the actual assessment imposed amounted to Rs. 55,315, an increase of 11 per cent. on the old demand. No addition was made to the fixed assessment of canal land in this circle, as the amount involved was considered too small to be taken into account.

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III. C.Revenue
Administra-
tion.Indri Kha-
dar.

The Khadar of the Indri pargana is the worst tract of the kind along this part of the Jumna, being inferior both to the Khadar of Pipli and Jagadhri to the north, and to that of Karnal and Panipat to the south. Its soil is throughout inferior, being either the lightest of sand or the stiffest of clay. The Jumna floods do a good deal of harm, and the lands they moisten are little more productive than those dependent on rain. Percolation from the canal still swamps considerable areas, though it improves the productive power of others. The tract has long been in a stagnant condition, while its neighbours have been rapidly becoming more prosperous. Cultivation has increased by only one per cent. since Mr. Douie's settlement, the number of wells in use has slightly decreased, and population has fallen off considerably, owing partly to the unhealthy climate and partly to emigration to more favoured tracts. On the other hand, cattle have largely increased, and the realignment of the canal has restored some of the fertility of a considerable area in the south of the circle. On the whole the circumstances of the tract called for tender treatment. The recorded chahi area is 11,907 acres, but the average area actually irrigated in the 13 years, 1895-08, was only 8,127 acres, and the average matured area of the three years, 1905-08, (two of them very dry years), 8,589 acres. Only 8,000 acres actually irrigated on a long average of years were considered as assessable at the high chahi rent. The remaining area classed as chahi was treated as barani. A considerable area was available for a cash rent estimate. The half-net assets estimate based on cash rents was as follows:—

Soil.	Area in acres.	Half-net-assets rate.	Resulting estimate.
		Rs. A. P.	Rs.
Chahi (actually irrigated) ...	8,000	2 8 0	20,060
Canal sailab ...	4,422	2 2 0	9,397
Jumna sailab ...	14,424	1 8 0	21,626
Barani ...	34,969	1 6 0	48,092
Total cultivation ...	61,815	...	99,115

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The estimate by kind rents was Rs. 1,01,640, and half the present renting value of the circle was taken as one lakh. The following rates were sanctioned :—

Soil.	Area in acres.	Revenue rate.	Resulting assessment
		Rs. A. P.	Rs.
Chahi (actually irrigated) ...	8,000	2 4 0	18,000
Canal sailab ...	4,422	1 14 0	8,291
Barani and Jumna sailab ...	49,393	1 3 0	58,654
Total cultivation ...	61,815	...	84,945

The Settlement Officer was instructed to aim at an assessment of Rs. 85,000, an increase of 5 per cent. on the old assessment, Rs. 80,915, and equivalent to 85 per cent. of the estimated half-net-assets. The actual assessment announced was Rs. 88,046, an increase of 8 per cent. on the old demand.

(e)—*Thanesar.*

The demand of the year 1887-88 for the tahsil as now constituted was Rs. 2,28,763. This was raised by Mr. Douie's revision, which took effect from that year, to Rs. 2,43,966, a reduction being allowed in the Southern Chachra and the increase obtained from the other circles. The working of the assessment was proof both of its moderation and of the secure position of the tahsil, for during the currency of settlement it was only necessary to remit Rs. 11,094. The rainfall returns also testify to the security of the tract, the average rainfall for the last 20 years being 29 inches. The demand for the year 1906-07 was Rs. 2,40,364, the reduction since 1887-88 being due to diluvion. Thirty-one per cent. of the revenue is assigned.

The limit of increase in cultivation had been reached at Mr. Douie's settlement in the Bet Markanda and probably in the Bangar also. In the other three circles there was then, and still is, a considerable margin for increase; but while the cultivated area has greatly increased in the two Chachra circles it has remained stationary in the Khadar. The largest increases in the number of cattle of all kinds have also occurred in the two Chachras, though the increase is general throughout the tahsil. There has been a considerable increase in the area

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irrigated from wells in the two Chachras, and a large number of old wells have been brought into use. The decrease in the number of wells and in the area irrigated from them in the Khadar and Bangar circles is no less indubitable and no less striking. The water-table in the two Chachras appears to have risen since last settlement.

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III. C.
—
Revenue
Administra-
tion.
—
Cultivated
area,
Population.

The population of the two Chachra circles has increased since last settlement, but in the other circles there has been a decrease. Thanesar has been benefited by an immigration of Malis, but there appears to have been an emigration of menials, and there has been a large mortality among all classes from plague. Of agricultural tribes the Jats and Rajputs are the more important. Kambohs are numerous in the Bangar and Khadar. Bannias have taken strongest hold in the Bangar and Northern Chachra circles. Pressure on the land is not excessive.

The percentage of the cultivated area sold since settlement varies from 7 per cent. in the Bet Markanda and 11 per cent. in the Khadar, to 17 per cent. in the Bangar and 21 per cent. in the Southern Chachra. As much as 22 per cent. of the cultivation is now under mortgage in the Bet-Markanda, 15 in the Khadar and Bangar and 8 per cent. in the two Chachras. These proportions are comparatively high, but an examination of the prices paid for land in terms of the land revenue of the area sold suggests that the lightness of the demand has tempted capitalists to acquire the land of the more thriftless among the agriculturists. The value of land, however, has risen considerably and one pleasing feature of alienations in the past is the acquisition of land by Malis in the two Chachras.

Transfers.

The decrease since last settlement in the proportion of the land cultivated by the owners themselves to that cultivated through tenants paying rent was very marked, being due partly to mortality from plague and partly to the acquisition of land by non-agriculturists. Proprietors now cultivate 60 per cent. of the cultivation in the Chachra and about half in the other three circles. Rent is paid in kind on one-third of the total cultivated area in all circles. Cash rents are of importance only in the Khadar and the Bangar, where they are paid on 8 and 11 per cent. of the cultivation only, though they have gained in popularity in all circles since last settlement.

Proportion of
area culti-
vated by
owners and
by tenants
respectively.

In these circumstances the produce estimate was the principal foundation of the assessment proposals. The estimates based on cash rents were recognised as reliable guides to

Half-net-
assets esti-
mate.

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III. C.Revenue
Administration.Half-net-
assets esti-
mate.

the assessment of the Khadar and Bangar circles, and afforded a useful check on the produce estimate in the other circles. The estimates are compared below :—

		Net Markanda.	Khadar.	Bangar.	Northern Chachra.	Southern Chachra.
		Rs.	Rs.	Rs.	Rs.	Rs.
Half assets by kind rents	...	1,39,082	36,502	38,260	63,207	25,666
Half assets by cash rents	...	2,35,921	45,625	48,474	88,060	45,092

The Settlement Commissioner increased the Assistant Settlement Officer's proposed assessment in all circles, and the Financial Commissioner after revising the half-net-assets estimate adopted the Settlement Commissioner's proposals, except in the Southern Chachra circle, where the demand was increased. The assessment of the Bet Markanda circle was still further enhanced under the orders of Government.

Assessment.

The new assessment is thus compared with the old demand and the revised estimates of half-net-assets :—

	Financial Commis- sioner's estimate of half-net- assets	Old demand.	Assessment as sanctioned.	Actually announced.	Increase per cent. on old demand.	Percentage of proposed assessment on half-net- assets.
	Rs.	Rs.	Rs.	Rs.		
Bet Markanda	1,60,000	94,464	1,26,000	1,19,960	27	78
Khadar	40,000	27,400	30,000	31,035	13	75
Bangar	45,000	41,068	41,000	42,674	4	91
Northern Chachra	70,000	51,070	63,000	64,994	27	90
Southern Chachra	35,000	26,492	32,000	35,145	33	91
Total tahsil	3,50,000	2,40,494	2,86,000	...	19	82

(d)—*Kaithal.*

Cultivation increased enormously in the two canal-irrigated circles and advanced in all the others also except the Naili :—

CHAP.
III C.
—
Revenue
Administra-
tion.
Cultivated
area.

Circle.			Nardak.	Bangar.	Naili.	Bangar Pehowa.	Andarwar.	Powadh.
Cultivated area in acres	Last settlement		91,000	148,000	75,000	17,000	12,000	22,000
	Now	...	146,000	174,000	68,000	22,000	14,000	23,000

In the Nardak the area of barani cultivation remains the same as at last settlement, and the area now irrigated by the Western Jumna Canal is almost identical with the increase in the total cultivated area. In the Bangar, on the other hand, which was much more fully developed before the advent of Sirsa Branch, the area of barani cultivation has diminished by 34,000 acres, while that recorded as nahri has increased by 50,000 acres. The reduction of 7,000 acres in the Naili is the net result of decreases of 1,000, 11,000 and 5,000 acres, respectively, in chahi, sailab and barani land and increases of 8,000 acres in land irrigated from the Sarusti Canal (non-existent before) and 2,000 acres in *dahr* land. The term *dahr* was limited to a hard soil capable of yielding the coarser varieties of rice, and nothing else. Seven thousand acres, therefore, have gone out of cultivation, though 8,000 have been made more secure by the grant of irrigation. The increase in the Bangar Pehowa is nearly 33 per cent. on the former cultivated area, and 3,700 acres have been made more secure by the new Sarusti Canal. In the Andarwar the increase amounts to 13 per cent., partly in chahi, but chiefly in barani land. In the Powadh there have been increases of 500 acres in chahi and 2,400 acres in the nahri land (Sirhind Canal irrigation), counterbalanced by a decrease of 2,000 acres in the area recorded as "*tibbi*."

There are more wells in the Naili circle than in any other, but they are there worked only if the floods are short. The depth to water averages 25 feet. The only circles in which well-irrigation is of importance are the Andarwar and the Powadh. The proportion of chahi cultivation to the total is greater in the former than in the latter, although the depth to water is 33 as compared with 22 feet. In the Nardak, Bangar and Bangar Pehowa the depth to water is 66, 63 and 41 feet,

Well irriga-
tion.

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III. C.
Revenue
Administra-
tion.
—
population.

respectively, and there is little cultivation from wells. In the Naili the crops grown are not of the less valuable varieties, but the crop returns show the area of crop failure to be enormous.

The increase in population during the last 20 years was 46 per cent. in the Nardak and 22 per cent. in the Bangar, due largely to immigration of cultivators on the spread of canal irrigation. The Bangar Pehowa is a tract more similar to those two circles than to the other three, and there also population has increased with cultivation. In the Andarwar and Powadh the figures of 20 years ago have barely been maintained: this is due to the general unhealthiness of the former circle and to plague in the latter. In the Naili circle there has been a considerable drop, for which the malarious and unhealthy climate is partly responsible, but which is also partly due to the emigration of menials and cultivators consequent on the droughts of the last 14 years. In all circles the density on cultivation is light, and the average area of the proprietary holding is large, being lowest in the Andarwar, where it is 6 acres, and rising as high as 21 acres in the Nardak. Jats hold the bulk of the cultivated land of the tahsil, and predominate in most of the circles, but the so-called Jats of the Andarwar and Powadh circles include Jat Sikhs. The Jats of the Naili are of poor physique, but those of the southern part of the tahsil are among the best of their tribe. Rajputs are numerous in the Nardak and Naili circles, holding half the cultivation in the former and nearly as much as the Jats in the latter, and are industrious and of good physique. Rors are a strong element in the Nardak and Bangar Pehowa circles, in each of which their holding exceeds that of the Jats. Gujars own a considerable proportion of the Naili and Bangar Pehowa circles, and have also substantial holdings in the Nardak and Bangar.

ansfers.

The percentages of the total cultivation (a) sold since last settlement and (b) now under mortgage are as follows for various circles:—

	Nardak.	Bangar.	Naili.	Bangar Pehowa.	Andarwar.	Powadh.
Percentage sold ...	5	3	6	5	2	5
Percentage under mort- gage.	3	6	11	4	12	11