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ASSESSMENT REPORT OF THE RAYA TAHSIL OF THE SIALKOT DISTRICT.

File No. 29.

FROM

No. 155.
J. M. BUNNETT, ESQUIRE.

Junior Secretary to the Financial Commissioners,
Punjab.

No. 20

To

THE REVENUE SECRETARY TO GOVERNMENT,
PUNJAB.

Dated Lahore, 16th February 1914.

The Hon'ble Mr. A. H. Diack, C.V.O.

SIR,

I AM directed to forward a copy of the Assessment Report of the Raya Tahsil of the Sialkot District by Mr. D. J. Boyd, I.C.S., Settlement Officer, and the draft of the orders which the Financial Commissioner proposes to pass thereon.

2. I am to add that Mr. Casson, Commissioner, Lahore Division, was prevented by illness from completing his remarks on the report before the above review was drafted, and having been given an opportunity of criticizing it has expressed his general concurrence and has no remarks to add.

3. A printed copy of the correspondence on the commutation prices sanctioned for adoption in this settlement is enclosed for reference.

I have, etc.,

J. M. DUNNETT,

Junior Secretary to the Financial Commissioners,
Punjab.



**Orders of the Financial Commissioner, Punjab, on the Assessment
Report of the Raya Tahsil of the Sialkot District.**

No. 21

THE Raya Tahsil is a rough parallelogram, about three times as long as it is broad. The Ravi flows along the south-eastern border, and the numerous

Physical features, etc.

channels of the Degh torrent cut up and enrich the north-western portion. The north-east has been formed by deposits from torrents which find their way into the Ravi there, while the centre is a strip of stiff clay which receives the surplus floods of the Degh after they have dropped their silt in the upper villages. These natural distinctions justify the adoption of the four assessment circles, Khadir, Dokandi, Darp and Kalar, and account for the differences in the quality of the soils. The Darp has a light alluvial loam and its wells are mainly protective: the Kalar on the other hand with its stiff clay, saline in places, is mainly dependent on its wells: the Dokandi is intermediate between these two: and the Khadir is a typical riverain circle of fair fertility. The rainfall, which on an average varies in different parts of the tahsil between 30 inches and a little over 20 inches per annum, is ample, regular and well distributed. There are no soils too poor for continuous cultivation, and except on the weakest lands *barani* cultivation has a reasonable prospect of success.

2. The tahsil head-quarters lie within 30 miles of Lahore and Amritsar and within 40 miles of Sialkot, and the means of communication with these

Communications and markets.

centres of commerce are inferior, there being no railways or metalled roads. In spite of this and of the numerous torrent beds, such unmetalled roads as there are are freely made use of for export by means of camel and donkey carriage and the prices obtained by the zamindars are generally higher than in the other tahsils owing to the greater proximity to Amritsar and Lahore. It is noteworthy that there has been a large increase in the number of donkeys, mules and carts.

3. Wells are important everywhere, and are of prime consequence in the Kalar and Dokandi circles where the well-irrigated area amounts to as

Irrigation wells.

much as 77 per cent. and 60 per cent. respectively of the total cultivated area. Water is nowhere more than 20 feet from the surface and varies in depth from 6 to 9 feet. From the statistics the water level appears to have sunk and the area irrigated per well to have diminished since last settlement; but the Settlement Officer distrusts the previous figures and is inclined to think that there has been no material change in these respects. From the figures for unusually dry years it is clear that the potential area of irrigation is as large as it ever was.

4. There has been little change in the area recorded as cultivated except in the Khadir, and the Settlement Officer has given good

Increase in cultivation and in irrigation.

reason for distrusting the reality of the decrease of 5,000 acres in cultivated area which the Khadir statistics allege. The figures are those of the last *jamabandis* and may not agree with those ultimately obtained by map revision; but Mr. Boyd does not anticipate that there will be such a discrepancy here as was found in Daska between the two sets of figures.

5. The following statement shows the principal crops in percentages on the average matured area and compares with them the corresponding percentages

Crops.

for adjacent circles. There is a strong resemblance between the Darp and the circle of the same name in Shakargarh, and the Raya Darp would seem from this test as well as from that of sale prices to be the better of the two. The Khadir comes in quality as in position between the Ravi Bet of Shakargarh and the Gasrah of Sharakpur, though the selling price is higher than in Shakargarh. There is no circle with which the Dokandi and Kalar can be compared, the Sharakpur Rohi being (at any rate prior to the advent of canal irrigation) inferior to both. *Rabi* cultivation, here as elsewhere, has grown at the expense of the *kharif*, and it is probable that it is the loss of population during the last 15 years, through plague and emigration that has led to a contraction of the area under cane:—

Principal crops in percentages on the average matured area.

Crop.	TAHSIL RAYA.				TAHSIL DASKA.			TAHSIL SHARAFPUR.		TAHSIL SHAKARGARH.		
	Dokandi.	Darp.	Kalar.	Khadir.	Charkhari II.	Charkhari I.	Aik.	Rohi.	Gasrah.	Darp.	Bet Ravi.	
Rice	20.75	2.5	11.59	2.22	4	1	6	12	5	2	2	Kharif fodder includes jowar.
Maize	4.86	7.17	5.66	9.23	4	6	9	1	6	9	12	
Sugarcane	1.77	6.38	3.8	4.18	3	3	4	1	...	5	11	
Cotton	1.92	2.6	2.4	2.7	3	4	3	1	1	3	3	
Fodder	4	7.3	5	5	9	8	4	5	4	9.4	9.25	
Others	4	12.4	5.8	6	4	8	5	1	3	12.6	1.75	
Total kharif	37.25	38.5	34.5	29.3	27	25	31	21	19	41	39	
Wheat	41.1	39.3	44.44	47.77	36	41	41	37	47	35	44	
Barley	6.1	6.28	7.17	5.65	6	5	4	5	4	4	3	
Gram	2.06	2.6	2.24	1.8	13	8	3	23	16	2	...	
Wheat and gram	85	5	1.1	6	...	...	...	...	...	1	1	
Wheat and barley	...	...	...	...	2	3	2	...	...	2	...	
Fodder	5.4	3.74	6.18	4.9	11	14	13	8	7	3.5	4.25	
Others	7.2	9.1	4.25	10	5	4	6	6	7	11.5	8.75	
Total rabi	62.75	61.5	65.5	70.7	73	75	69	79	81	59	61	

In the first paragraph on page 20 the Settlement Officer draws from his statistics the conclusion that cultivation is less successful than of old. This opinion is based on the higher proportion of sowings which are now recorded as failed, and the explanation given is that the *khud-kasht* area has fallen, tenants themselves proprietors cultivating their tenancies in a less careful way than their proprietary lands. The accuracy of this opinion is doubtful. The *kharaba* figures for settlement and now (the years are given at the beginning of paragraph 37) are shown in statement XI. They throw great suspicion on the accuracy of crop records in the earlier period, *e.g.*, *kharif* failures of 1.1 per cent. in the Khadir and 2 per cent in the Darp, the circles least protected by irrigation. It cannot be believed that annual failures have doubled in the Darp and trebled in the Khadir, side by side with increased irrigation from wells and torrents. This subject is reverted to in paragraph 30.

6. Population is everywhere ample without being redundant.

Population.

The decrease in population during the last 20 years is described as economically beneficial, and holdings which vary from circle to circle between 5.8 to 8.9 acres cultivated are neither too small to afford comfort nor too large to be manageable. The effect of plague, however, seems to have been unequal, and in almost one-fifth of the villages in the tahsil the average holding exceeds 10 acres. Jats (partly Sikh, partly Musalman, the latter predominating) are the preponderating tribe in all circles, and are good agriculturists. They hold 70 per cent. of the cultivated area of the tahsil. Rajputs, Dogars and other unsatisfactory agriculturists are of no great importance except in the Khadir, where the first-named own 25 per cent. of the cultivated area.

7. In the Khadir, but not elsewhere, there is income from cattle,

Live stock.

and there cow-buffaloes have considerably increased and cows have not diminished in spite of bad years like 1911-12. Well and plough cattle though diminished are sufficient. The prices of animals have largely increased.

8. The main sources of miscellaneous income are military service (Rs.

Miscellaneous income.

13,734 per annum paid by the Post Office as pensions), and the sale of reeds from the riverain. This latter source of income has been taken account of by the Settlement Officer in his village-to-village assessments, but not in his half asset estimates. A good deal of money must be received from the canal colonies where people of this tahsil hold 1,292 squares.

9. There is nothing to cause alarm in the alienation statistics. Only

Land transfers.

one per cent. of the cultivated area has been permanently alienated to non-agriculturists during the currency of settlement, and the total held by that class is 8 per cent. or less of the whole in the various circles, and three-fifths of the mortgaged area is pledged to zamindars. The usual causes, loss of cattle, extravagance, domestic and marriage expenses, and the necessity for money to make a start in the canal colonies have been at work, but the insecurity inseparable from agriculture does not appear to be a prolific source of embarrassment. The disastrous cycle of years 1897-98 to 1901-02 is not marked in any circle by an inflation of the mortgaged area or by any diminution in the rate of redemption; nor was any great amount of land sold during these lean years.

10. The features of the figures showing the value of land are the enormous increase in value whether gauged by sale or mortgage, and the slight degree in which prices vary from circle to circle. Below comparison is made of the value of cultivated land in various circles:—

Circle.		Sale price per acre.	Years.	Mortgage considera- tion.	Years.
		Rs.		Rs.	
Raya	Dokandi	163	1907—1912	118	1907—1912.
	Darp	163		125	
	Kalaf	142		120	
	Khadir	151		125	
Daska	Charkhari II	91	1906-07—1910-11	67	1906-07—1910-11.
	Charkhari I	141		96	
	Aik	278		190	
	Bet Bela	61		63	
Sharakpur	Rohi	74	1901-02—1909-10	36	1901-02—1909-10.
	Gasrah	74		47	
Shakargarh	Darp	138	1905-06—1909-10	124	1905-06—1909-10.
	Bet	93		95	

The only circle outside Raya in which land fetches more when sold than here is the Aik, and only in the Aik and the Shakargarh Darp is more money secured on mortgages.

11. The proportion of the cultivated area under cash rents is substantial in all circles but the Darp, though in all circles rent in kind is the more common, and has become more prevalent since settlement, showing increased profit to the landowners. In the share of the produce taken there has been little if any increase. In paragraph 43 Settlement Officer gives reasons for thinking that cash rents are too high to be a fair index of the renting value of the land. His reasons are not altogether convincing, for abnormal rents have been excluded from those entered in statement VII-B, and if the remaining rents be compared with the profits of a purchaser or mortgagee as calculated from the price or mortgage money, they do not seem unduly large. Considering the large areas on which the *chahi* rents shown in statement VII-B are paid, and considering also their amount as compared with *barani* rents and their variations from circle to circle, they can scarcely be regarded as being other than a fair, and in the Dokandi a low measure of the renting value of such lands. The *barani* rents on the other hand are discredited both because they are calculated from comparatively small areas, and because they are sometimes much larger than *chahi* rents. For the Kalar circle in which the proportion of *barani* land is small (18 per cent. of the circle), and the *barani* cash rent is not high, the half asset estimate based on cash rents must be accepted as being something near the mark. In the Dokandi the estimate is lowered by the low *chahi* rent. For the other two circles it is full or even high.

12. One of the most important factors in the produce estimate is the cycle of years selected to give the average area of matured crops. The Settlement Officer was here allowed to take the average for the term of settlement because he could not find a shorter representative cycle. The figures for each year are given in statement VIII.

13. In the Dokandi, while there were wide variations from year to year in unirrigated crops, the average for irrigated crops and for the total appears to be as near a true normal as can be obtained, and to be on the safe side.

Normal matured area : Dokandi.

14. In the Darp the average is for irrigated crops a true normal, but for unirrigated it is pulled down by the unusual number of years of scarcity which occurred among the last 20 (1896-97 and 1899-1900 were famine years and 1907-08 was here worse than the former of these, and there were other bad years). I would put the normal at 54,000 instead of 51,000 acres, and would raise the produce estimate by the value of 3,000 acres of *rabi barani* crops.

Normal matured area : Darp.

15. For the Kalar the cycle gives a true normal.

Normal matured area : Kalar.

16. In the Khadir there has been a real falling off in cultivation owing to diluvion, and the area cropped was distinctly larger in the earlier years of the cycle than in the later. The average of 38,000 acres is too high, and I would reduce the estimate by the value of 1,000 acres of *kharif* crops.

Normal matured area : Khadir.

17. The few changes made in the assumed rates of outturn as compared with those of last settlement are judicious. The most important is an increase in the yield assumed for gram. The wheat yields are suitable, except that that of 8 maunds for *chahi* wheat in the Kalar, though it may be right where wheat follows rice, is certainly too low for wheat grown in a fallow.

Yields.

18. The all-round rise in prices, calculated from Gazette prices (which is the best test, being a comparison of actuals with actuals), is 50·6 per cent. or the same as was accepted for the Daska Tahsil. In two-fifths of the villages of the tahsil, where holdings average 5 acres or less (paragraph 29), the rise in prices can have been effective in only a small degree, but elsewhere they must have secured most of the benefit.

Prices.

19. The allowance for payments to menials, made from fodder and straw as well as grain, and absorbing from $\frac{1}{6}$ to $\frac{1}{8}$ of the gross produce in the various circles is certainly liberal, but in view of the known difficulty of the zamindar with his *kamins* in the Sialkot District may be accepted.

Deductions.

20. In the produce estimate *abi* has been lumped with *chahi* in all circles and in the Darp and Kalar *sailab* has been included with *barani*. The landlord's share of the produce has been taken as 44 per cent. on all soils in the Dokandi and Kalar and 49 per cent on all soils in the Darp and Khadir. The share should have been worked out separately for each class of soil and applied to the crops of that class. The correct calculation made in this way raises the half asset produce estimate of the Dokandi to Rs. 2,30,000 and that of the Kalar to Rs. 1,34,000, and lowers that of the Khadir to Rs. 1,45,000.

Batai rates.

Straw.

21. Additions have been made on this account in all circles, except the Kalar, for pulses and *rabi* crop. The amounts added to the landlord's share are —

						Rs.
Dokandi	...	...	...	...	...	31,248
Darp	...	...	...	...	...	31,180
Khadir	...	...	...	...	...	23,149

Yields and prices are lenient.

22. In deducing "true half assets" from his various estimates the

True half net assets.

Settlement Officer starts by assuming that his cash rent estimate must be too

high. I have given reasons above for disagreeing with him as to this, and in endeavouring to form a true estimate of half assets I will start with the Kalar circle in which I have shown that the cash rent estimate is trustworthy. I give below the various estimates, first correcting the *batai* estimates for the Darp and Khadir by adding Rs. 9,000 and subtracting Rs. 4,000 on account of the variations from a true normal given by the selected years, and also adjusting the estimates for the Dokandi, Kalar and Khadir, so as to make them equivalent to the correct landlord's share of the produce :—

Circle.	<i>Batai</i> estimate.	Cash estimate.	Sale price estimate.	Settlement Officer's true half assets.	Half assets assumed by Financial Commissioner.
1	2	3	4	5	6
	Rs.	Rs.	Rs.	Rs.	Rs.
Dokandi ...	2,80,000	1,50,788	2,04,155	1,65,000	1,70,000
Darp ...	2,21,000	1,82,190	2,41,469	1,65,000	1,80,000
Kalar ...	1,84,000	1,18,170	1,65,890	1,03,000	1,20,000
Khadir ...	1,41,000	1,45,276	1,50,405	1,17,000	1,20,000
Tahsil ...	7,26,000	5,96,424	7,61,919	5,50,000	5,90,000

23. In the Kalar, where the cash rent estimate can be relied on, the

The same : Kalar circle.

approximation between the two first estimates is sufficient to justify the

adoption of Rs. 1,20,000 as the true value of half assets, which is 10 per cent. below the produce estimate.

24. A similar deduction from the produce estimate would give

The same : Khadir circle.

Rs. 1,27,000 for the Khadir, and the Settlement Officer also puts the Khadir

estimate higher than the Kalar. But on the other hand, while the selling price is about the same in both, the cultivated area of the Khadir is smaller than that of the Kalar, and this would point to the annual profits also being smaller. On the whole, I cannot put the true half assets of the Khadir at more than those of the Kalar, and I take them as the same or Rs. 1,20,000.

25. For the Darp a deduction of 10 per cent. from the produce estimate

The same : Darp circle.

is scarcely sufficient in view of the fact that the cash rent estimate is

probably a full one. I take true half assets here as Rs. 1,80,000.

26. The Dokandi has a smaller cultivated area, and though its cash

The same : Dokandi circle.

rent estimate is certainly too low, its produce estimate is almost certainly too

high, and the sale price estimate shows that the real value of half assets here is less than in the Darp. I take Rs. 1,70,000 to be about right.

27. The various assessments up to 1860 (including the First Regular Settlement) amounted to successive reductions of the Sikh demand, the level finally reached being 41 per cent. below the Darbar's collections. The Second Revenue Settlement (1865) gave an increase of 6 per cent. and the Third Revenue Settlement (1892) 27·8 per cent. Substantial increases were then taken in the Darp and Dokandi and moderate increases in the other two circles. The present assessment is Rs. 3,23,577 against an announced demand of Rs. 3,31,922.

28. The expiring settlement has worked well. Suspensions have been allowed freely in bad years, as was right in a tract so much influenced by torrent and river flood, and the total amount which it has been necessary to remit is small and has been almost entirely in the Khadir, in villages in the southern portion of it which have so deteriorated from river action that in recent years the remission has been granted as a matter of course.

29. The method of assessment is novel. The Settlement Officer after considering the circumstances of the tahsil has fixed for it an increase of 23 per cent. because (a) "the rise in cash rents is the safest guide," and (b) His Honour Sir Louis Dane on the forecast report thought that it would not be safe to take an increase of more than 23 per cent. Having thus got the tahsil demand the Settlement Officer has distributed it over his circles. The procedure is incorrect, and the proper course is to assess each circle on its merits and so arrive at the tahsil demand, but in this case the Settlement Officer with his thorough knowledge of his circles and villages has practically arrived at the same result.

30. Cultivation has on the whole not increased. A number of villages have gained in all circles by reason of fresh silt deposits in the last 20 years from the Ravi, the Basantar or the Degh, but others have lost. In the Khadir there has been a net loss by diluvion. But in saying in paragraph 37 and paragraph 55 that the average area matured has decreased for the tahsil as a whole, the Settlement Officer is scarcely warranted by the figures in statement VIII. Indeed the remark in paragraph 55 refers rather to the respective areas assumed for the produce estimates than to the actual areas matured 20 years ago and now. Statement VIII shows that in all circles but the Khadir the matured area of the early years of the term of settlement has been equalled and even exceeded in some of the later years. Still there has certainly been no expansion and the sole ground for enhancement is the rise in prices of produce and the extent to which we may safely increase on that account is best measured, as Mr. Boyd says, by the rise in cash rents. To measure that rise he has compared (paragraph 44) the rents recorded in the village note-books for 1892-93, which represent the most up-to-date figures of the last settlement, and the corresponding figures for 1911-12. But while the increase in rent is one of the main factors of enhancement, it has also to be considered to what extent the expiring demand in each circle was inadequate, and what further increase is justified on that ground, for the circle assessments of last settlement were relatively unequal.

31. Of the Dokandi the present assessment is Rs. 87,246, its true half net assets by my estimate are Rs. 1,70,000, and the Settlement Officer's proposed demand is Rs. 1,13,000 or 67 per cent. of that and falling at Rs. 2-4-3 per acre of matured crops. The enhancement of 30 per cent. is quite sufficient to take account of previous under-assessment as well as the rise in prices. Moreover, it involves a much larger rate of enhancement in the villages in the north of the circle which have benefited by renewed silt deposits, and a lower rate in the other villages. I accept the proposed new demand of Rs. 1,13,000.

32. The somewhat mechanical method of arriving at soil rates described in paragraph 60 is open to several criticisms. It is based partly on the produce estimate, and to that extent is largely conjectural, and partly on cash rents which have been shown to be unreliable guides between irrigated and unirrigated land. And as compared with the rates of last settlement they throw the great bulk of the increase on *barani* and *sailab* land. The Settlement Officer has justified this to me on the ground that the villages which have improved so as to contribute most towards the increase in the circle demand have improved exactly in respect of their *barani* and torrent *sailab* land. He has tested his rates in this circle by applying them to villages and wishes to adhere to them, and he may do so.

33. The Settlement Officer proposes to raise the present demand of the Darp, Rs. 1,08,000, to Rs. 1,25,000, which is 69 per cent. of the half assets (Rs. 1,80,000 according to my estimate) and falls at Rs. 2-7-3 per acre of matured crops as compared with Rs. 2-5-6, the corresponding incidence of the new demand recently sanctioned for the adjacent Shakargarh Darp. This difference probably marks correctly the difference between the two circles as evidenced by crops and the value of land. A slightly higher increase to Rs. 1,30,000 might be taken, but after examining the Settlement Officer's proposed assessments of villages and after seeing some of those, I think that the rise involved in the best villages by his proposals is quite sufficient and that we need not go further. The increase is only 16 per cent., but the pitch of the present demand, as shown by its relation to the purchase price, is higher than in any other circle. The Darp is a rich tract, but it has to depend on its wells for protection in years of drought, the area irrigated varying from 7,000 or 8,000 in a good year like 1900-01 or 1906 to 20,000 or over in a bad one. On the whole I accept the proposed demand of Rs. 1,25,000 as adequate.

34. In this circle the Settlement Officer admits that his proposed rates are liable to criticism on the grounds stated in paragraph 32 above, and that his *barani* rate should be raised. He may use the following :—

						Rs. A. P.
<i>Chahi</i>	...	...	...	...	...	2 13 0
<i>Abi and sailab</i>	...	...	...	...	...	2 4 0
<i>Barani</i>	...	...	...	...	...	2 0 0

35. The present demand of the Kalar is Rs 65,000 round and the Settlement Officer proposes to raise it by 19 per cent. to Rs. 77,000 or 64 per cent. of my half asset estimate of Rs. 1,20,000, and falling at Re. 1-14-6 per acre of matured crops. The corresponding incidence of the recently imposed demand in the adjoining and at present inferior Sharakpur Rohi is Re. 1-10-0. The proposed demand is right with reference to those accepted for the other circles, and I agree to it and also to the rates for distributing it over soils which in this circle are suitable. Torrent action has affected different parts of the circle in different ways, and though the increase for the circle is only 19 per cent., the enhancement in the better villages is as much as 30 to 60 per cent.

36. The Khadir is midway between the Shakargarh Bet Ravi and the Sharakpur Gasrah. The former circle is purely *barani* and *sailab*; the latter contains no true riverain land, and 76 per cent. of the cultivated area is irrigated from wells. The new demand in the Gasrah falls at Re 1-8-0 per acre of matured crops and in the Shakargarh Bet Ravi at Rs. 2-2-4. The justification for enhancement, besides the rise in prices, is an increase of 31 per cent. in the number of wells, but the cultivated area has fallen. The

Settlement Officer is doubtful whether the loss has been as great as statistics show (10.7 per cent.). The demand of last settlement was Rs. 70,921 and the present demand is Rs. 61,691, a drop of nearly 13 per cent., so that the loss of area has been allowed for in diluvion assessments. The Settlement Officer proposes an assessment of Rs. 80,000 involving an increase of 25 per cent., absorbing 66 per cent. of my half net asset estimate of Rs. 1,20,000, and giving an incidence on matured crops of Rs. 2-1-0 per acre. As we have to consider only the increase in irrigation and the rise in prices, the increase proposed is not severe. I accept the proposed demand and the soil rates proposed for its distribution.

37. In the event of water-logging being caused in the Khadir circle by the Raya Branch of the Upper Chenab Canal being brought into use, the fixed assessment now introduced should in the villages affected be with the previous sanction of the Financial Commissioner converted into a fluctuating assessment at the crop rates proposed in paragraph 64 which are suitable.

38. The Settlement Officer's separate report on the amendment of the alluvion diluvion rules will be awaited.

39. In dealing with the Daska Assessment Report Mr. Fagan thought it premature to consider proposals for the assessment of land irrigated from the Upper Chenab Canal. Here in Raya however with irrigation promised from the Raya Branch in the very near future it is necessary to provide for the assessment of the land which will receive it. The Settlement Officer proposes that within the blocks selected for irrigation the revenue should be wholly fluctuating, the fixed demand, if any, which may now be imposed on them, being remitted. The fixed assessment however which I have approved for the Kalar and Dokandi circles is a very light one and the landowners who benefit by canal irrigation will be well able to pay both the fixed demand now imposed and an acreage rate on canal-irrigated crops in addition, especially as it is intended as far as possible to confine canal irrigation to land now lying waste, and particularly to discourage it on *chahi* land. This is the system which has been approved for the Rohi and Gasrah circles of the Sharakpur tahsil.*

*Paragraphs 15-16, Financial Commissioner's review, Sharakpur Assessment Report.

will be watered in the *kharif* only and it has been decided† that except on perennial irrigation from the Upper Chenab Canal the assessment is to be made by the Deputy Commissioner and not by the Irrigation Department. Mr. Boyd proposes an average rate of Rs. 2 per acre matured by canal irrigation both here and in Daska. The average rate sanctioned for the Rohi circle of Sharakpur is Rs. 2-4-0‡ per acre sown, differentiated from village to village with a maximum of Rs. 2-8-0 and a minimum of Re. 1-8-0, and for the Gasrah it is Rs. 2, with the same maximum and minimum. The soil of the waste land of the Dokandi and Kalar circles to which the Upper Chenab Canal irrigation is applied is hard and sour and on the whole inferior to that of the Rohi, and it will be sufficient to adopt for it the Rs. 2 rate, with maximum and minimum as above, and to apply it to the area sown, not matured, as is the practice now on the perennial canals on which fluctuating assessments are maintained.

†Paragraph 36 of above, and also subsequent correspondence with the Irrigation Branch.

‡Paragraphs 32, 27 and 28.

40. It may be necessary in consequence of the diversion of the Degh and the Montgomery Canal referred to in paragraph 6 of the report to place under a completely fluctuating system of assessment, at any rate, for a time, the villages which thereby lose the floods they receive at present. In that case the rates proposed in paragraph 66 will be suitable for application: viz., Rs. 2-4-0 per acre *chahi* and Rs. 2 per acre *sailab* and *abi*, to the area

§Revision of assessment on loss of flood water.

matured : and Rs. 2 per acre *nahri* (differentiated in the manner indicated in the preceding paragraph) to the area sown. For *barani* crops the rate may be Re. 1-4-0 per acre matured. But there has been no stoppage of flood-water so far, and the Settlement Officer would prefer to announce and distribute, for the villages likely to be affected, fixed assessments at the rates sanctioned for the Dokandi and Kalar circles, and await results. I agree to this. If it is found at any time that conditions in any such village have seriously changed, the fixed assessment may be cancelled at any time with the sanction of the Financial Commissioner and the fluctuating system substituted.

Cesses : Instalments.

41. No change is proposed in the rate of cesses realized.

42. A further report from the Settlement Officer will be awaited as to the instalments for payment of the new demand.

Period of settlement.

43. The period of settlement will be fixed for the district as a whole when Mr. Boyd submits his final settlement report, but it will be well to note here the considerations working for a long or a short term in this tahsil. Government interests are not likely to suffer if the period is 30 years, for though the assessment is light, the enhancement to be obtained at next settlement is not likely to be so great as to make it a matter of import that the term should be 20 rather than 30 years. The development of canal irrigation is not likely to be great and the Rs. 2 *nahri* crop rate might remain for the term of settlement without much loss to Government : or provision may be made for revision of the *nahri* crop rate whenever the rate is revised elsewhere on the Upper Chenab Canal. On the other hand, the changes which have occurred in the last 20 years in consequence of torrent and river silt having been deposited in places whence they were formerly withheld, and withheld from places where they used to be deposited, and which have altered the pressure of the demand in different circles and in different parts of the same circle, are likely to be repeated in the future, and for that reason it might be well to provide that the term should be 20 years, extensible for 10 years more if it is found at the end of that time that the changes which have occurred are not such as to render a redistribution of revenue necessary.

44. As to progressive assessments which, as observed above, will be required in a number of villages in the Dokandi, Darp and Kalar circles, the rule should be the usual one that when the increase exceeds 33 per cent. on the old demand, all in excess of the 33 per cent. shall be deferred for 5 years, and anything in excess of 66 per cent. for 5 years more.

Progressive assessments.

45. Mr. Boyd has acquired a thorough knowledge of the tahsil and has written a most interesting report. His tentative village assessments, which I have checked in all circles, are well considered and judicious.

The 18th December 1913.

A. H. DIACK,

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ASSESSMENT REPORT

OF THE

RAYA TAHSIL

OF THE

SIALKOT DISTRICT.

No. 22

CHAPTER I.—PHYSICAL FEATURES.

1. The Raya tahsil occupies the southern portion of the Sialkot district. It forms a rough parallelogram, some 40 miles long by 12 broad, bounded on the north by the Zafarwal and Pasrur tahsils, on the west by Pasrur, on the south by the Sharakpur tahsil of the Gujranwala district and on the east by the Ravi and the Shakargarh tahsil of the Gurdaspur district. There are a few villages of Raya across the Ravi adjoining the Ajnala and Batala tahsils. The area of Raya is 487 square miles and it contains 492 estates. The tahsil enjoyed a fixed boundary at last Settlement except in the case of two villages, Viroke and Daud, and their boundary was finally determined in 1904.

General description.

2. The last Assessment Report contains a good description of the physical features of the tahsil and I will confine myself mainly to noting the principal changes that have occurred since. The tract is flat with no eminence higher than a mound. It is naturally divided into four parts which will be referred to in the description of Assessment Circles. The slope is from north-east to south-west as indicated by the course of the Ravi, Basantar, Bhed, Jajri and the changeful Degh. Of these the Ravi alone is perennial, the others being storm channels.

The same.

3. Since Settlement the course of the Ravi has shifted in some places to the right, in others to the left and its vagaries are mainly responsible for the decline in cultivation in the Khadir Circle. South of Kotli Bajwa it has cut inland down to Arazi Ghaziwal; thence as far as Mirowal a considerable area has been recovered on the right bank but a large slice of Mirowal, Shahaliwal and Ladhar has gone into the river and the Lahore-Raya road in the latter village has disappeared. From Passianwala down to Pathan Dhingai the river has shifted to the right but after it leaves the latter village it takes a sharp left-handed turn to Arazi Nakian and then merely skirts the district till it leaves it altogether. Thus a large area has been recovered in the south-east corner but it is still bela in character. There are signs that the left-handed turn may be omitted and in recent years inundations have gone straight south from Pathan Dhingai into Gorian and Awan Labana leaving a deposit of excellent silt when they retire.

Rivers, streams and drainage channels.

4. The Degh enters the tahsil at Tetharwali, splits into two in Talwandi Bhindran, the main branch going to the south-east through Hallowal, Baddomalhi and Jiwan Goraya while the other passes through Adoke and the western border of Kotli Nathu Malhi on to Gharial Kalan, joining the left branch near the junction of that village with Bhuchh and Gharial Khurd. Another branch, which is seldom active now, enters from Pasrur at Magola and meets the joint waters of the other Deghs at the trijunction of Bhuchchar Nangal, Hachchar and Uchcha Pind. As far as Bhuchh the banks of the stream are

The same.

low and floods spread over the villages to the south-east of its course leaving a wonderfully fertile deposit of silt. Below that village the stream is normally confined within its banks and only overflows in times of high flood or when dammed as, for instance, by the band at Hachchar. When a village is first visited by Degh inundations the result is desolation as cultivation in its course becomes well nigh impossible. This is happening at present in Tatlé. After a few years the level of the soil rises and the village becomes rich and prosperous. The Darp was probably formed in this way by the Rai or Basantar and several of the Kalar villages as well as those of the Dokandi are being similarly fertilized. The Degh on the west and the Ravi on the east are combining to diminish the infertile area of the tahsil and something less than a third remains as the inhospitable Kalar. Of this a considerable portion will soon be irrigated by the Raya Branch of the Upper Chenab Canal.

5. The other streams do not deserve further description beyond what is contained in the last Report. The only important change consists in the destruction of the masonry dam on the Bhed at Ladhewala. It irrigated 500 acres but the people were too supine to repair it after its ruin in 1896. The Basantar now joins the Ravi at Doaba. It does a little harm on its first entry into the tahsil but the northern branch from Than Waddha onwards and the southern from Kakkeke deposit a fertile silt of great benefit to the villages in their course.

6. Colonel Montgomery was the author of many useful minor irrigation works throughout the district. Unfortunately several of his excellent schemes have fallen into disrepair but the opportunity of Settlement is being taken to put them in order and some good has been done already. To maintain these useful schemes in ordinary times, when the Deputy Commissioner has no relief, a strengthened engineering staff is required and I hope it will be provided. The Raya tahsil teems with opportunities for extending irrigation. The dams at Arud Afghan and Baddomalhi may be mentioned and also the Montgomery or Jivan Goraya Canal which distributed the surplus waters of the Degh through the Chhambh at Chakrali down almost to the borders of the Sharakpur tahsil, providing arid Kalar villages with the means of growing the finest rice crops. Unfortunately this last mentioned work is being diverted to save the Raya Branch and its usefulness will cease henceforth.

7. The average rainfall was estimated at last Settlement at 28 inches on the north-east to 18 inches on the Gujranwala border. The average recorded in the five years preceding the Settlement was 26.9" but the returns were regarded as untrustworthy. For the years 1892-93 to 1910-11 on which the produce estimate is based the recorded average is 26.93 inches. The gauge is situated nearly at the centre of the tahsil. At Shakargarh about 12 miles from the north-east border it is 34.65 inches and at Sharakpur some 28 miles from the south-west it is 16.30 inches so that the Darp probably gets 30 inches and the other end of the tahsil a little over 20 inches. The average is $2\frac{1}{2}$ inches better than that of Daska. Nearly three-quarters of the fall occurs in the monsoon months, June to September, but in eight years out of nineteen the rains have practically stopped at the end of August. As rice is far the most important crop excepting wheat, an early cessation of the monsoon is a very serious matter, much more serious than in the Daska tahsil where its importance is not nearly so great.

The lowest fall in any year was 11.31 inches in 1899-1900. The highest, 46.78 inches, occurred in 1908-09. The average rainfall is ample for agricultural purposes and the crops suffer as often from excessive rain and floods as from drought.

8. With the exception of the big stretches of kallar waste in the south-west and of the belas in the riverain, the tahsil is so fully cultivated as to leave little room for natural vegetation. On the lower reaches of the Degh,

however, there are a few villages where the holdings are comparatively large and timber is fairly plentiful. The Shisham and the Kikar are the only non-fruit trees at all commonly grown. The Siris, Persian lilac, Pipal, Bohar and a few other common trees are occasionally found, but never in any numbers. Gardens with oranges, limes and a few mangoes of inferior quality are commoner than in the Daska tahsil and the Ber, especially the "Paiwand" variety, is frequently met with both singly and in groves and brings in an appreciable income to its owner. The belas produce valuable kana reeds which are generally bought by Mahtams to be made into ropes, mats and baskets or to be used for thatching purposes. The tender shoots are used to a considerable extent as fodder especially in seasons of short rainfall. Pilchi, from which baskets are made, is also found in the belas. The best grazing in the tahsil is provided by these river lands which produce kahi and some of the better grasses. Coarse grass abounds after rain in the kallar waste towards the south-west of the district and also in some of the southern Dokandi villages which, with their Shisham, Kikar and Persian-lilac trees, present a park-like appearance. Elsewhere little grass of any kind is to be found and 11 per cent. of the cultivated area has to be devoted to raising fodder crops. Thistles and the wild leek are the commonest weeds and they are not kept down so successfully as in the Daska tahsil. Itsit, a spreading plant like the melon, is a nuisance while the kharif is ripening. Dab grows wherever it is given a chance. Dila and barru are also frequently met with. They are coarse grasses akin to weeds and the latter is said to be poisonous to cattle in times of scarcity. The ak is found mostly in sandy waste, but it is met with in small quantities everywhere. On the whole there is little variety or attractiveness in the vegetation of the tract.

9. The communications of Raya are generally inferior. No railway

Communications and markets.

passes through the tahsil but a survey has been made for a line to connect Amritsar with Sialkot and the people have lived in hope for many years. There is not even a telegraph line, though the important trading centre of Narowal badly requires telegraphic communication. The main line of the North-Western Railway passes within 8 miles of the south-western border of the tahsil, but there is no road to it except the very bad unmetalled road from Shahdara which is about 13 or 14 miles from the border. The rest of the tahsil is far from any railway and the Ravi and Degh are serious obstacles in the way when they are in flood and to a certain extent at all times. During the monsoon the country between the Degh and the Lahore-Raya road is impassable and long detours have to be made by the inhabitants of a tract comprising about half the tahsil if they wish to reach the Head quarters of the district. Recently after rain had fallen I had to travel from Raya to Sialkot *via* Ajnala, Amritsar, Lahore and Wazirabad, the passage of the Ravi alone taking over two hours.

There are no metalled roads at all in the tahsil and very few unmetalled ones worthy of the name. That from Raya to Pasrur and Sialkot degenerates into the bed of the Degh a few miles north of Raya but a diversion to the east is about to be undertaken by the District Board and will prove an immense boon. Narowal is connected with Pasrur by a very fair road and the crossing of the Degh on this route is seldom troublesome.

The principal markets for the tahsil are Sialkot, Amritsar and Lahore. Their distances from its centre are 39, 27 and 28 miles respectively. The traffic is carried on mainly with camels and donkeys but a considerable number of pony-carts ply constantly between Narowal and Lahore in spite of the awful state of the road near and beyond the border of the Gujranwala district. During the enquiry into prices, however, it was found that the zamindar of Raya obtained higher rates for barley, gram, massar, maize, gur and cotton than the zamindar of any other tahsil and in wheat he did next best to the Daska grower. The figures were so astonishing that I had them specially verified. The leading men explain the position by saying that little of the grains mentioned is grown while the gur sold is mostly from the Darp the produce of which is famous. The argument may be correct but it does not

explain the high price of the main staple, wheat. There are no municipalities in the tahsil but Narowal in the Darp, Daud in the Khadir and Baddomalhi in the Dokandi are notified areas with small bazaars.

10. Under the orders contained in letter No. 4695, dated the 16th September 1912, from the Junior Secretary to the Financial Commissioners, sanction was received to the retention without change of the division into assessment circles adopted in the First Regular Settlement and preserved throughout the next two. The circles are,—Darp, Dokandi, Khadir and Kalar. The Darp is the head, the Dokandi and Khadir the flanks and the Kalar the back-bone and tail of the tahsil.

If I were required to describe them I could not do better than repeat Captain Dunlop Smith's accurate account contained in paragraphs 15 to 18 of the last Assessment Report. With this reference it is sufficient to add that the Darp is mainly a barani tract with a fertile loam soil formed by alluvial deposits, singularly retentive of moisture and generally easily worked. In the hollows, however, it becomes a stiff rohi which requires to be broken up with mallets before it can be properly cultivated. Wells are very deceitful. The zamindars never can tell where to find water and quack water-smellers make a fortune while the zamindar has to mortgage his land to pay the cost of sinking one unsuccessful well after another. The "toba" or well cleaner is in constant request and hardly a morning passed during village inspections without my seeing two or three wells in the process of disgorging their sand and clay at the bidding of the well-cleaner. After a few hours' working the output of most wells has a milky appearance because of the quantity of sand thrown up with the water. The people are ready to experiment with tubes and I hope to see an improvement before Settlement is over but the hope is by no means a certainty. It was said in the last report that very little rain was sufficient for the tract. The statement requires qualification now for the last Kharif and Rabi were very inferior on barani lands. It may be that the soil is drying up and it is to be noted that sugarcane no longer has the importance it used to have, the average matured area in the years 1906-07 to 1910-11 (omitting 1907-08) being 3,003 against 4,477 in the years 1885 to 1889 although the rainfall of the recent period was 35 inches while that of the earlier period was only 24.41 inches.

11. The Khadir has the usual riverain characteristics. The soil is generally a light maira, sandy in parts, and the difference between irrigated and unirrigated crops is not nearly so great as in a well-circle like the kalar. Shor is seen in places but is not a serious evil. The Khadir is much more fertile than the Bet Bela in Daska because the Basantar and Ravi deposit a good deal of silt while the Chenab deposits little so far as the Daska tahsil is concerned. In the rabi of 1913 sailab and even barani crops in the Khadir were fair to good in spite of the somewhat unfavourable character of the season. The Raya estates on the Amritsar side of the river seemed to me generally inferior to those on the Sialkot side and to their neighbours in the Ajnala tahsil, the reasons being that they have suffered many vicissitudes through the erratic course of the river and that a considerable number of them belong to Rajput owners. In the southern reaches of the Ravi the villages are apt to suffer serious losses from floods when the spring harvest is ripening. The Khadir has not the well-wooded appearance of the Bet Bela but on the other hand it is amply supplied with reeds and grazing from which a considerable income is made.

12. The Kalar extends from close to Narowal down to the Gujranwala border. The soil is generally a stiff kalrathi rohi, with constant outcrops of shor. Real barani cultivation is very difficult except in the villages bordering on the Darp and in one or two others which have recently come under the influence of the Degh and the harvest depends mainly on irrigation from wells or from drainages which are ponded up by the construction of dams. From

Chakrali southwards many of the villages have received water from the Montgomery Canal, distributed by a series of channels with their head in the Chakrali Kund or Chhambh. The supply will now be stopped by the canal but Kharif irrigation from the Raya branch will take its place. The circle has a bleak inhospitable appearance. It is impassible after rain and snakes infest the tract in the autumn months. Mosquitoes are a serious pest both here and in the Dokandi. Cattle disease is prevalent in the rains and serious losses are caused thereby. The rearing of young stock whether of cattle or horses is almost impossible. The Kalar seems to me less fertile than the Charkhri II of Daska but it has greater facilities for irrigation. The existing revenue rates of this circle are as high as I have now ventured to propose for the Charkhri II and there is no doubt that the two circles were unevenly assessed at last Settlement.

13. The Dokandi is much as described at last Settlement. The most active branch of the Degh at present is the Hallowal branch but the greater part of its supply is exhausted by the time it reaches Jiwan Goraya. The Degh is working eastwards in the northern part of its course in this tahsil and there are signs of a channel forming in Tatle which may in time benefit several Kalar villages about the centre of the tahsil. The soil in the upper reaches of the stream is a rich light loam; further down it becomes a good brown rohi. In this respect the action of the Degh is very like that of the Aik and indeed there is considerable resemblance between the Dokandi villages north of the Raya branch and those of the Aik circle in Daska. In the lower reaches, however, some water is sometimes found and a certain amount of profitable jhalar irrigation is carried on. The villages south of the Raya branch benefit less from the stream than the rest of the circle and approximate to the Kalar tract in character. Cattle disease, snakes and mosquitoes are serious evils in the Dokandi as in the Kalar and life in either circle is extremely unpleasant during the rains.

14. The soils defined in paragraph I (4) of appendix VII to the Settlement Manual have been adopted for assessment purposes under the sanction contained in letter No. 45354, dated 23rd July 1912, from the Junior Secretary to the Financial Commissioners. As in Daska so in Raya patwaries have in the past described all lands as chahi which have ever received well water and a considerable part of the chahi area enjoys irrigation from other sources in addition to wells. In this settlement a stricter classification is being adopted and land is only recorded as chahi which has been actually irrigated in two or more harvests during the four years preceding settlement and for which permanent means of irrigation still exist. The application of the terms "abi" and "sailab" in the Dokandi and Kalar circles is sometimes difficult to decide. "Abi" in these circles means land irrigated by cuts from the Degh or from drainage channels that carry off its surplus waters while "sailab" is applied to lands which are flooded when the stream and its off-shoots overflow. There is no nahri land in the tahsil at present but some estates of the Kalar and Dokandi which lie to the west of the Raya Branch will receive irrigation for their waste lands in time. So far the Branch has not been dug in this tahsil. The natural soils recognised locally are the same as those found in Daska and described in paragraph 9 of the report of that tahsil. The kallar soils of Raya are much less fertile than those of Daska and white efflorescence is seen commonly throughout the Kalar and part of the Dokandi circles, while in Daska it is never found except in the riverain. As very few zamindars in Raya could tell me what dosahi is I do not add it to the list though Captain Dunlop Smith gave it a place.

CHAPTER II.—FISCAL HISTORY.

15. The fiscal history of the tract prior to the expiring Settlement is given in detail in the last report. Since annexation one Summary Settlement and three Regular Settlements have been made. The demand of the Summary settlement was pitched at 10 per cent. below the average revenue taken by the Sikhs in the preceding 5 years but it had to be reduced by 10 per cent. in the

first Regular Settlement of 1855, by another 6 per cent. two and-a-half years later and by an additional 15 per cent. in 1859 or 1860, so that by 1860 the Summary Settlement demand was reduced 31 per cent. The second Regular Settlement, completed in 1865, resulted in a rise of nearly 6 per cent. on the revenue fixed five years before. It was conducted under the immediate direction of Mr. Prinsep and the well abiana system discussed in paragraphs 56 to 66 of the Settlement Manual was introduced by him. He also deferred part of the enhancement taken till after three, five, ten, fifteen and twenty years. The final assessment amounted to 9 per cent. more than that of 1860.

16. The third Regular Settlement was one of tribulation

The third Regular Settlement.

for the Settlement Officer, Captain (now Sir James) Dunlop Smith whose

Assessment Report was subjected to a considerable amount of destructive criticism by the Lieutenant-Governor, Sir Dennis Fitz-Patrick. Under the orders of Government a further local enquiry was made by the late Sir Denzil Ibbetson, then Commissioner of Rawalpindi, and after its results had been discussed the original orders of the Financial Commissioner were confirmed. They involved an increase of 27·8 per cent. distributed as follows:—Darp, 29 per cent.; Khadir, 16 per cent.; Kalar, 17 per cent. and Dokandi 36 per cent. In arriving at the assessment Captain Dunlop Smith framed a produce estimate for a typical holding of 100 acres in each circle and not for the whole area as is now done. He deduced theoretical rates from this estimate and combined them with the theoretical cash and lump rent rates in the proportion in which each form of rent was taken. Applying the result to the areas then existing the half-net assets estimate of each circle was worked out but the actual assessments were based on those made during village inspection and Sir Denzil Ibbetson, after testing the latter, found that they were not a safe basis for determining the revenue. With regard to the produce estimate the yields assumed were regarded by the higher authorities as full but the prices were considered moderate. The Settlement Officer himself distrusted his cash rent statistics and his method of using them was faulty. I have found them entirely out of accord with those of the nearest years for which reliable records exist and the lump rents appear to me even more unreliable.

Results of the various Settlements.

17. The results of the various Settlements are shown below:—

Circle.					First Regular Settlement.	Second Regular Settlement.	Third Regular Settlement.
Darp	...	...	...	...	95,595	81,261	1,07,895
Khadir	...	...	...	...	78,902	61,909	70,921
Kalar	...	...	...	...	62,904	63,789	65,235
Dokandi	...	...	...	...	67,965	61,191	87,871
Tahsil					3,03,366	2,58,100	3,31,922

The third Regular Settlement still left the revenue some Rs. 20,000 short of the Sikh demand on which the Summary Settlement was based. The new assessments came into force in Rabi 1893 and the Settlement expired with the past Rabi. Statement No. XIV shows the variations in demand from year to year. They are due to the expiry of protective leases on wells, the falling in of wells, land acquisition, alluvion and diluvion. It has not been possible to ascertain with accuracy the demand previous to 1894-95 as the new assessment was not brought on to the Fixed Land Revenue Roll before that year,

18. It is difficult to say now whether the assessments were well distributed or not as the Degh, Ravi and minor means of irrigation have changed considerably since Settlement. Great care was taken in the bachh and it is said that the people were induced to adopt differential soil rates even where they showed little enthusiasm for this method of distribution. On the whole few applications for a reclassification of wells have been received, but so far several applications have been made for a simpler form of distribution. These, of course, will be examined with caution.

19. Owing to the greater proportion of unirrigated land, and to the vagaries of the Degh agriculture is much more uncertain in this tahsil than in Daska and the amount of revenue suspended and remitted is considerably higher. It is also, I think, beyond doubt that Raya is the more heavily assessed. The proportion of the total demand suspended or remitted is shown below:—

		Proportion of total demand of 19 years.	
		Suspended.	Remitted.
Dokandi	...	4.6	.4
Darp	...	7.2	.8
Kalar	...	1.7	.2
Khadir	...	4.0	1.1
Tahsil		4.8	.6
Shakargarh	...	5.8	2.1
Ajnala	...	2.5	1.4
Sharakpur	...	10.9	5.6

Compared with neighbouring tahsils Raya does not come off badly with regard to its ability to pay the revenue although it has no canal irrigation, but it looks as if the Darp should be more cautiously assessed than other circles. The heaviest suspensions were made in 1896-97, 1899-1900, 1901-02, 1902-03, 1907-08 and 1911-12—all of them years of insufficient rainfall which shows that though excessive rain may be as common a complaint as drought the latter is much the more serious calamity. Suspensions have been made in the Dokandi in 13 years out of 19 and in 12 years in the Khadir. Since 1905-06 some portion of the revenue has been suspended every year in the former circle, and the same has occurred in the latter since 1907-08. At the present time more than a sixth of a year's demand is under suspension. These facts will be attended to in the distribution of the new assessments among villages. In view of the large proportion of unirrigated cultivation in the tahsil and of the vagaries of the Degh and Ravi suspensions must be frequent if the revenue administration is carried on wisely and the comparatively small amount that has had to be remitted shows that the existing assessment is not pressing heavily on the people. In the last 8 years on an average 76 processes, 17 warrants of attachment and 26 warrants of arrest have been issued to ensure the collection of the revenue and there is more friction in this tahsil than in its neighbours, Ajnala and Shakargarh. The riverain villages give the most trouble partly because a considerable number is owned by Rajputs and partly because so many of those responsible for payment are absent in the canal colonies.

20. Of the total demand Rs. 15,750 or nearly 5 per cent. is assigned. The Mananwala family and Pir Ashraf Alam Shah are the principal jagirdars, but most of the assigned revenue is attached to religious and charitable institutions, and the greater part are of very trifling amount. Small grants were made with a lavish hand in Mr. Prinsep's settlements.

CHAPTER III.—GENERAL STATISTICS.

21. I have selected the area of the year 1892-93 for comparison with the present area because the measurements of last Settlement had not advanced far enough to make the figures for earlier years at all reliable. The principal changes in area are exhibited in the following statement:—

Circle.					Total area.	Not available for cultivation.	Available for cultivation.	Cultivated.
					Acres.	Acres.	Acres.	Acres.
Dokandi	...	...	...	...	+138	+266	+268	-396
Darp	...	...	...	...	+40	-283	+435	-112
Kalar	...	...	...	...	+92	-448	-377	+917
Khadir	...	...	...	...	+271	+623	+4,290	-4,642
Tahsil					+541	+158	+4,616	-4,233

The increase in total area is partly a matter of measurement and partly the result of the Financial Commissioner's order fixing the boundaries of Daud in 1904. The Dokandi and Khadir are responsible for the increase in the area not available for cultivation. In the former 285 acres have been taken up for the canal; in the latter the change is due to river action as well as to land acquisition. The increase in the culturable waste is due chiefly to the vagaries of the river in the Khadir, and elsewhere to changes in cultivation or in classification of soils.

22. The annexed form shows that on the whole there has been no great change in the proportions of cultivated and irrigated area since Settlement.

Detail.	DOKANDI.		DARP.		KALAR.		KHADIR.		TAHSIL.	
	1892-93.	1911-12.	1892-93.	1911-12.	1892-93.	1911-92.	1892-93.	1911-12.	1892-93.	1911-12.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Percentage of total area cultivated	62	61	88	88	46	47	63	56	63	61
Percentage of cultivated area irrigated	68	68	31	31	78	79	27	31	51	52
Percentage of cultivated area unirrigated	32	32	69	69	22	21	73	69	49	48

The cultivated area of the tahsil has fallen by 4,233 acres or 2 per cent. but here again the Khadir Circle is responsible for nearly the whole difference. There have been immaterial decreases in the Darp and Dokandi Circles, an increase of 917 acres in the Kalar, but in the Khadir diluvion and land acquisition have caused the loss of 4,642 or 11 per cent. of the cultivated land. I have some doubts as to the reality of this decrease in the Khadir because the Area Statement of 1894-95 shows a smaller cultivated area than that at present existing. No statement was prepared in 1893-94, but it is unlikely that 4,700 acres went out of cultivation in one circle between 1892-93 and 1894-95 and I suspect that the figures till the latter year were wrong. In the Dokandi 187 acres of cultivated land have been acquired for the canal: in

the Kalar 91 acres and in the Khadir 175 acres. Allowing for this and assuming that the statistics for 1892-93 are correct, the Darp and Dokandi circles have practically stood still, the Kalar has improved considerably; only the Khadir has deteriorated and there the deterioration is due to river action and not to the serious economic causes which make the position in Daska somewhat unsatisfactory. When we look at the details of the cultivation too the figures are comforting as they show that the decrease lies entirely in the unirrigated area, the increase in chahi land more than compensating for the decrease in the abi. The position is summarised in the following table :—

Detail.	Dokandi.	Darp.	Kalar.	Khadir.	Tahsil.
Cultivated area { Total increase or decrease ...	-396	-112	+917	-4,642	-4,233
{ Increase or decrease per cent.	-.7	-.2	+2.2	-10.7	-2.1
Chahi { Total increase or decrease ...	+747	+82	+1,272	+560	+2,661
{ Increase or decrease per cent.	+2.4	+5	+3.9	+4.8	+2.9
Abi { Total increase or decrease ...	-561	-320	-246	+8	-4,119
{ Increase or decrease per cent.	-10.5	-58.3	-27.0	+133.3	-16.4
Sailab { Total increase or decrease ...	+1,784	+132	+176	-3,677	-1,585
{ Increase or decrease per cent.	+28.6	+21.9	+27.7	-23.4	-5.9
Barani { Total increase or decrease ...	-2,366	-6	-285	-1,533	-1,190
{ Increase or decrease per cent.	-20.9	0	-3.3	-12.5	-5.9

23. The following statement gives the information with regard to wells—(a) Changes in number.
wells required by the Settlement Manual :—

Detail.	Dokandi.	Darp.	Kalar.	Khadir.	Tahsil.
Number of wells in use at the beginning of the expiring settlement which have fallen out of use.	293	230	351	150	1,024
Number of wells sunk since settlement and still in use.	470	541	497	351	1,859
Increase ...	+177	+311	+146	+201	+835

This statement has been prepared from more recent figures than those contained in Statement No. II. Both, however, show an increase of more than 800 wells over the whole tahsil. Of wells actually in use there were 428 more in 1911-12 than in 1892-93. Each circle has shared in the increase. The abnormal number of bad seasons in the last 20 years has given a stimulus to well-sinking. Other causes of the increase are the multiplication of land-owners and quarrels among co-sharers which compel the weaker to seek independent means of irrigation. Wells built by the weaker brethren in such circumstances are frequently of crude construction and it is generally believed that the modern well

lasts a much shorter time than those made some 20 or 30 years ago. The efficiency of wells at last settlement and now is compared in the annexed table :—

Detail.	DOKANDI.		DARP.		KALAR.		KHADIR.	
	At settlement.	Now.	At settlement.	Now.	At settlement.	Now.	At settlement.	Now.
Depth to water ...	15	18	18	20	15	16	14	14
Depth of water per well in existence ...	8	9	8	8	6	7	7	6
Recorded chahi area per well in use ...	22	19	20	15	21	20	14	14
Area actually irrigated per well in use...	27	17	26	12	27	20	14	15
Area matured per well in use ...	25	15	24	12	24	18	13	14

The figures for the last three lines relate to quinquennial periods of nearly equal rainfall and so provide a fair comparison. No account has been taken of kachcha wells and dhenklis in this calculation, though their area is classed as chahi. In the first three circles the water-level has sunk, but the advent of the Raya Branch will remedy this trouble in the south-western half of the tahsil. The Darp, however, will remain unaffected but a depth to water of 20 feet cannot be regarded as any obstacle in the way of well-irrigation. The quantity of water in the wells is nearly double that ascertained in the Daska tahsil but the supply is really not so good and though in the Dokandi, Kalar and Khadir a fair supply is obtainable it is true of the tahsil as a whole and especially of the Darp that the wells are unreliable and the water is quickly exhausted. In all circles but the Khadir the recorded chahi area per well in existence has declined owing to the increase in the number of wells serving the same area.

There is a great discrepancy in the figures of area actually irrigated and matured at settlement and now. A similar discrepancy was noticed in the Daska report and in view of the fact that the area recorded at settlement as chahi is smaller than that shown as matured there is reason to suspect that crops irrigated from the Degh or from chhambhs and ponds were described as well-irrigated. I very much doubt whether there has been any such deterioration in the efficiency of wells as the figures would suggest. In the Khadir where there has been the greatest increase in the chahi area and in the number of cattle the efficiency of wells would appear to have been fully maintained.

24. Wells are all of the Persian wheel type and are generally jointly owned by several co-sharers whose

(b) General remarks.

turns are determined by their shares in the original cost and who share the expense of repairs accordingly. Abiana is sometimes taken at Re. 1 per acre irrigated from non-shareholders who take water from the well but in the case of friends or relatives no charge is made. The wood-work is always paid for in cash in this tahsil and not hired as frequently happens in Daska. If the owners supply the wood the carpenter receives half its value for fashioning the well-gear. Ordinary repairs are done by the carpenter as part of his regular duties but he generally gets his food while engaged on the work. I refrain from giving any estimate of the cost of working a well as it is too speculative to be of practical use. A committee of zaildars worked out an estimate of the profit and loss of a well but their first calculation produced a loss and the second a minute profit. The fact is that when we proceed to affix money values to the fodder—straw, sinjhi, clover, grass etc.—eaten by cattle and to the labour of men engaged on the well it is difficult to keep the estimate of cost within reasonable limits. A much better test of the profitableness of wells is a reference to the difference between chahi and barani rents on similar soils in the same village. Unlined wells or

dhenklis are commonly constructed near the bank of the river or of a stream or pond by Arains to irrigate their chillies and vegetables and the jhatta and lat-gheri are used frequently on village ponds in the Dokandi to irrigate the rice crop.

25. Owing to the classification adopted in Statement No. X appended to the last Assessment Report no detailed comparison is possible between the number of cattle shown therein and that ascertained at the special census taken in 1913. It would appear, however, that the total number of cattle has declined by 6,000 or 4 per cent. The statistics for 1892-93 contained in the circle note-books appear more reliable than those given by Captain Dunlop-Smith and they provide all the details required for purposes of comparison. As compared with 1892-93 there has been an increase of 7,774 or 6 per cent. in the total number of cattle. The increase has occurred entirely in cow-buffaloes and young stock and amounts to 58 per cent. in the case of each while bulls and bullocks have decreased by 24 per cent. The percentage of increase or decrease is shown by circles in the appended table :—

Circle.			Bulls and bullocks.	Co vs.	Male buffaloes.	Cow-buffaloes.	Young-stock.	Total cattle.
Dokandi	...	...	-12	-24	-5	+52	+41	+10
Darp	...	...	-27	-21	-23	+54	+81	+3
Kalar	...	...	-31	-32	-12	+35	+30	-6
Khadir	...	...	-24	0	-1	+121	+90	+22
Tahsil	...	...	-24	-20	-11	+58	+57	+6

In the Kalar alone has there been any decrease in the total number of cattle but in every circle the first three classes have fallen in numbers. The kharif of 1911 caused terrible losses among cattle. In all parts of the tahsil I saw the tops of kikar trees used as fodder and there was a continuous stream of camels carrying coarse grasses and reeds from the Bela to other parts of the tahsil to keep the cattle alive. Although the rabi of 1912 was excellent it was followed by two inferior harvests and the people have not had sufficient time or means to replenish their stocks as yet. The enormous rise of young stock shown in the last census over that of 1908-09 indicates that owing to the high price of cattle the zamindar is looking to breeding as a means of supplying his requirements rather than to purchase. I can hardly think that differences in classification have much to do with the rise as the census was conducted mainly by the patwaris who were responsible for that of 1908-09. Moreover, I am assured by zaildars that the practice of dealing in cattle is becoming much more common among zamindars than it used to be. As in the Daska tahsil buffaloes, male and female, are used on the wells as commonly as bullocks. They are not as efficient, of course, but considering that cow-buffaloes yield food and some income in addition to their work on the wells their increasing popularity is little to be wondered at. Confining attention to bullocks and male-buffaloes there is an average of nearly $4\frac{1}{2}$ yoke to each well in use and as the wells are easily worked it is clear that there is no shortage of well-cattle. The total number of milch cattle works out at a little over one for every four persons and except in the Khadir I doubt if any appreciable profit is made by selling ghi. In that circle there is ample and good grazing and the abnormal increase in cow-buffaloes kept there indicates a growing tendency to make profits by its sale.

26. Emigrants to the canal colonies frequently take away their cattle and ploughs with them and it is not surprising that the numbers of the latter should have fallen by 8 per cent. On the average there is one plough

Ditto.

for every $8\frac{1}{2}$ acres of cultivated land, a provision that is just about adequate. Sheep and goats are kept mostly by village menials. They are increasingly profitable but cannot be considered as an item in the agriculturist's income. Interest in horses has been stimulated by connection with the Jhelum colony and by the higher standard of living now prevailing but the class of animal kept, except by a few of the bigger men, is very inferior.

Donkeys, mules and bullocks are the principal carriers of the tahsil and their numbers have risen by a third while the supply of carts has more than doubled. The latter are kept mainly in the riverain villages and ply for hire chiefly towards Amritsar.

27. In paragraph 22 of the Daska report I discussed the rise in the price of cattle and the sources of supply. On the evidence available the price appears to have increased 50 per cent. in the last decade in the case of kine and 90 per cent. in the case of buffaloes. The cost of bulls and bullocks is now 87 per cent. higher than at last settlement.

28. The tahsil would appear to have suffered more severely from emigration than from plague as there was a decrease of 10·3 per cent. in the population between 1891 and 1901 when emigration was in full swing and before plague had made itself felt and an increase of a little under one per cent. in the second decade when regular emigration had ceased and plague was doing its worst. As between 1891 and 1911 the decline in population has been 3·1 per cent. in the Dokandi, 11·2 in the Darp, 7·7 in the Kalar, 15·7 in the Khadir and 9·5 per cent. over the tahsil as a whole. The pressure of population per cultivated square mile is shown in the following statement :—

Circle.					1892-93.	Now.
Dokandi	...	...	...	...	608	583
Darp	...	...	...	...	769	683
Kalar	...	...	...	...	743	676
Khadir	...	...	...	...	718	676
Tahsil					701	652

In all circles there has been a beneficial decrease in pressure. It has fortunately been greatest in the Darp where population is most dense. The number of persons to the square mile is still high. It is greater than in the Shakargarh tahsil on one side and much greater than in Sharapur on the other and these facts must be borne in mind in comparing the tracts for purposes of assessment. Between the adjoining Darp circles of the Gurdaspur and Sialkot districts, however, there is not much difference in pressure. It is difficult to say how the introduction of canal irrigation will affect the question as both cultivated area and population will increase in the circles affected, the Kalar and Dokandi, but a temporary reduction of pressure should ensue in the other two circles.

29. The average cultivated area per owner at settlement and now is as follows :—

Average size of holdings.

Circle.					At settlement.	Now.
Dokandi	...	...	...	...	10.8	8.9
Darp	...	...	...	...	7.1	5.9
Kalar	...	...	...	...	8.2	6.6
Khadir	...	...	...	...	7	5.8
Tahsil					8.1	6.5

In spite of the decrease in population the number of owners has increased by 5,257 while the cultivated area is 4,233 acres less, with a consequent decrease in the average size of holdings. Even now it cannot be said that they are unduly small. In the Darp and Khadir they are much the same as in the corresponding circles of Shakargarh and Sharakpur : in the Dokandi and Kalar they are smaller. But though the average is not too small, there are many villages belonging to a single owner or to two or three co-sharers while there are others, especially in the Darp and Khadir, where the average cultivated area per owner is very small as the accompanying statement shows :—

AVERAGE CULTIVATED HOLDING PER OWNER.														
Assessment circle.		Number of estates with average holding of												Total number of estates.
		Over 10 acres.	10 acres.	9 acres.	8 acres.	7 acres.	6 acres.	5 acres.	4 acres.	3 acres.	2 acres.	1 acre.	Under 1 acre.	
Dokandi	...	39	7	9	10	8	7	12	5	5	3	3	...	108
Darp	...	26	7	12	11	11	16	19	27	16	8	1	...	154
Kalar	...	25	8	4	6	19	7	13	17	11	4	1	1	116
Khadir	...	19	3	3	5	11	10	9	10	19	11	9	5	114
Tahsil total	...	109	25	28	32	49	40	53	59	51	26	14	6	492

In a third of the Darp villages and half the Khadir there is less than 5 acres of cultivation per owner. As will be seen later congestion has been considerably relieved by the grant of land on the canals and the zamindars of this tahsil take full advantage of opportunities for supplementing their income by labour in the neighbouring cities of Amritsar and Lahore. It is the regular custom for zamindars whose holdings are small to take on lease the land of neighbours who are better endowed and a large proportion of the tenants-at-will are themselves owners. On the whole, then, the argument for lowering the assessment because of the smallness of holdings does not seem to me to be as strong as it considered at last settlement.

30. The tahsil is provided with a fairly good lot of cultivators. Jats own 70 per cent. of the cultivated area, the principal clans being the Bajwa, who hold a considerable part of the Darp; Bhindar, who are found in the centre

Tribal distribution.

of the tahsil; Wahla, in the rich villages in the north-eastern riverain; Kahlon, in the Darp, Malhi and Basra in the Dokandi. Next in importance come the Rajputs, holding 9 per cent of the cultivated land. As usual they are found on the river bank where cultivation is easy and the country looks inviting. There are three or four Rajput villages in the Dokandi also. After them come the Labanas, an industrious, acquisitive race, holding 3 per cent. of the land. Arains own over 2 per cent. and Gujars one per cent, while 8 per cent. is held by non-agriculturists. Pathans, Sayads, Dogars, Koreshis, Moghals and Kambohs make up the balance of the proprietary body. As agriculturists the Labanas and Arains are much superior to the other tribes. No labour is too monotonous or too severe for them and they make the best of whatever land they have. The Labanas take freely to military service from which they save a good deal of money and invest it in land. Unfortunately their reputation is not always of the best. There is a strong resemblance between them and the Bahrupias—soi-disant Rajputs of the Bet Bela in Daska. Among the Jats there is little to choose between tribe and tribe and the people themselves recognize no special characteristics as pertaining to any one sub-division. The Mussalmans claim to be lazier than the Hindus or Sikhs, but their claim is not allowed by the others. There are a good many bad characters among the Jats of the Darp and the Sikh villages of that circle are suspect in the matter of illicit distilling. I do not think that the Jats of Raya are as industrious as their brothers in Daska and agriculture is more slovenly in this tahsil. Possibly the greater depth to water and smaller proportion of unirrigated cultivation in Daska have developed more industrious habits among its people. The Rajputs rather pride themselves on their inefficiency as agriculturists and explain loftily that their real business is fighting and hunting. They are apt to be extravagant and much of their land is in the hands of tenants over whom little supervision is exercised. Still they are a cheery people and make good companions. The Gujars are hard working and fairly successful, and are, of course, well provided with milch kine.

31. Information with regard to alienations is contained in statements

Alienations—(a) Indebtedness.

VII-A and VII-B. The former has been specially prepared for the purposes

of this report and from it all duplicate sales by way of pre-emption have been excluded. Further, the price entered in the case of land which has been the subject of a pre-emption decree is that determined by the Court. The results of the enquiry are summarised thus:—

Percentage of cultivated area.

Circle.	SOLD SINCE SETTLEMENT.						NOW UNDER MORTGAGE.					
	To zamindars.	Price per acre.	To others.	Price per acre.	Total.	Price per acre.	To zamindars.	Consideration per acre.	To others.	Consideration per acre.	Total.	Consideration per acre.
		Rs.		Rs.		Ps.		Rs.		Rs.		Rs.
Dokandi ...	5	121	2	120	7	121	13	100	8	98	21	99
Darp ...	2	129	1	184	3	144	13	117	8	113	21	116
Kalar ...	4	126	1	129	5	126	14	112	8	99	22	107
Khadir ...	3	114	2	118	5	115	10	109	7	125	17	115
Tahsil ...	4	122	1	132	5	125	12	110	8	107	20	109

The proportion of the cultivated area sold is the same as during the preceding settlement but the amount taken by money-lenders has fallen by

half. Sales have increased in the Dokandi and decreased in the Kalar and Khadir. In the Daska tahsil sales were proportionately twice as heavy as in Raya and the average price 30 per cent. less. The area sold in this tahsil is so insignificant that further comment is not required beyond the statement that the returns give no reason to suspect the existence of any serious agricultural indebtedness.

The mortgage figures are not so favourable though better than in the case of Daska. Twenty per cent of the cultivated area is now under mortgage as compared with 19 per cent. at settlement but the proportion held by non-agriculturists has fallen from 11·5 to 8 and as most of the zamindar-mortgagees belong to the tahsil there is nothing alarming in the figures. Most land was sold in the Dokandi while the area under mortgage is largest in the Kalar. As already remarked these two circles have to contend against annual losses of cattle owing to the unfavourable conditions that prevail in the rains. Moreover, a more expensive class of animal is required to work their heavy soil. The Khadir has less encumbered land than any other circle though it is there that Rajputs mostly do congregate. Diluvion does not explain the favourable position of the Khadir for the proportion of total area—cultivated and uncultivated—under mortgage is less here than in the other circles. In the tahsil there are now 7,384 acres under mortgage more than at settlement but redemptions began to exceed fresh mortgages in 1905-06 and the cultivated area under mortgage in 1911-12 was less by 4,686 acres than in 1904-05. Unfortunately the fresh mortgage-debt still exceeds that annually repaid but the excess has been a diminishing quantity for some years past. The causes of alienation in Raya are much the same as elsewhere and require no special mention except in the case of the Darp where I found that an appreciable proportion of the indebtedness was due to unsuccessful attempts to sink wells. The rise in the cost of marriage owing to the scarcity of women, and the necessity of raising capital to start life in the canal colonies have added to the usual causes of the zamindar's embarrassment.

Alienations.—(b) Rise in the value of land. 32. For the sake of convenience I excerpt the quinquennial sale and mortgage prices for purposes of comparison:—

1	2	3	4	5	6	7	8
Circle.	SALES.					Rise percent between columns 2 and 6	Price paid by Government since 1905 for land taken up for the Raya Branch.
	1885-1890.	1892-1897.	1897-1902.	1902-1907.	1907-1912.		
	Rs.	Rs.	Rs.	Rs.	Rs.		
Dokandi ...	59	107	113	106	163	176	97
Darp ...	51	94	117	123	163	211	...
Kalar ...	70	120	119	94	142	103	114
Khadir ...	76	113	114	111	151	99	139
Tahsil ...	62	116	116	108	155	146	117

There was an enormous rise in the value of land in the five years immediately after settlement if the figures given in the last report are correct. In the next quinquennium the price remained steady but in the third the Land Alienation Act caused a slight fall everywhere except in

the Darp. The last quinquennium, however, shows another tremendous rise everywhere which the people explain as due to the influx of money from the canal colonies and to the great rise in the price of grain which commenced in 1907. The present price of land is $2\frac{1}{2}$ times that prevailing before settlement. The rise has been greatest in the Darp and least in the Khadir, but I know of no special reason why this should be so. Government appears to have got its land cheap but the canal passes through a comparatively inferior tract and the quinquennial prices given are swollen by rates settled with a view to defeat pre-emption claims. The prices for cultivated land only are, of course, considerably lower than those recorded above but for purposes of comparison the figures given are fairly reliable. The mortgage-prices are compared below :—

1	2	3	4	5	6	7
	1885—1890.	1892—1897.	1897—1902.	1902—1907.	1907—1912.	Rise per cent. between columns 2 and 6.
Dokandi ...	54	72	85	89	113	109
Darp ...	52	57	102	101	135	159
Kalar ..	38	62	86	91	120	216
Khadir ...	38	68	18	97	125	299
Tahsil ...	46	80	90	94	124	169

The effect of the Land Alienation Act is not quite so apparent in the case of mortgage prices as in the case of sales. Both sale and mortgage prices show an increase of about 150 per cent. as compared with those prevailing before settlement. The value of land is fairly level throughout the tahsil, the Darp rates being slightly higher than those of the other circles. One of the clearest evidences of the rise in land-values is to be found in the fact that mortgagees frequently advance extra sums on the land already mortgaged to them or release part of the land mortgaged without any consideration under the threat that if they do not, the mortgagor will redeem the whole, re-mortgaging a portion elsewhere.

33. Applying the third test of rise in land values, the increase in the proportion borne by sale prices to the land revenue of the land sold, the following results are obtained :—

1	2	3	4	5	6
Assessment circle.	1892-93 to 1896-97.	1897-98 to 1901-02.	1902-03 to 1906-07.	1907-08 to 1911-12.	Rise per cent. between columns 2 and 5.
Dokandi ...	65	65	67	92	41
Darp ...	70	59	63	87	24
Kalar ...	74	81	64	103	39
Khadir ...	67	69	72	93	39
Tahsil ..	68	67	66	93	27

The figures for the settlement of 1865 are not given as the standard of comparison altered with the introduction of the new assessment. This test

agrees with the others only in showing a great rise in the last five years. It indicates that there was no rise in values till that period. It also indicates that the Darp is the most heavily assessed circle and the Kalar the lightest. Calculated on the lines laid down in paragraph 381-B of the Settlement Manual the assessment appears to absorb 21 per cent. of the profits in the Dokandi and Khadir, 22 per cent. in the Darp and only 19 per cent. in the Kalar. These proportions are much smaller than in the Daska tahsil but either the test is fallacious or else my judgment of the comparative fertility of the Raya Kalar and the Daska Charkhri circles is sadly at fault.

34. In the Bela lands the Raya tahsil possesses a valuable asset which deserves consideration in determining the assessment. The munj reeds are generally sold by contract to Mahtams who reside in the Bela. They cut the reeds in spring and sell them in Lahore or Amritsar. In villages where the income from this source could be ascertained it amounted to Rs. 1,200 altogether in the present year. Rupees 2,000 is probably a fair estimate of the total profit made from reeds in the Khadir. In bad years inferior fodder is exported from the Bela to villages where there is none and though the zamindars declare that they take no payment there is a recognized rate of Rs. 2 per cart and Rs. 1 per camel-load for such fodder. Every year graziers, called Golis, from Gujranwala and Lyallpur bring their cattle to the Ravi Bela lands, establishing themselves under the protection of some prominent man to whom they pay a "nazar." As they are inclined to crime the zamindars make them move on wherever they are strong enough to do so. Sometimes Gujars from Gujrat also drive their stock to the Bela, but I could not discover that any appreciable income was made from grazing fees and respectable zaildars assure me that they are seldom taken. The land is, of course, greatly fertilized by the presence of large numbers of cattle and waste lands are often broken up the year after a herd has lain there.

The Jat Sikh of Raya takes freely to military service and Rs. 13,734 is paid annually through the Post Office to military pensioners of this tahsil.

A small carrying industry exists in several riverain villages but its profits cannot be easily computed. As already stated the people take advantage of the opportunities for labour presented in Amritsar and Lahore and every year there is a considerable temporary exodus to those cities both of zamindars and kamins. The former do not object to labour away from their own villages, but it is considered undignified to be seen working for hire near their own homes. The canal colonies have not yet lost their attraction though many tenants have returned with tales of the hard conditions put upon them by the landlords who, according to the tenants' story, treat them as helots, demanding personal service as well as rent in return for the privilege of cultivating canal-irrigated lands. Altogether 1,292 squares have been allotted to people of the tahsil, of which 176 went to the Dokandi, 176 to the Kalar, 238 to the Darp and 652 to the Khadir. The advantages of possessing or even leasing land in the canal colonies become amply apparent when enquiries are made as to the means by which land has been redeemed or taken on mortgage by agriculturists and there is clear evidence that the position of the people has been greatly strengthened by the colonization of the Crown lands on the Lower Chenab and Jhelum Canals. Finally, it should be noted that Jats are taking to money-lending to some extent but in this tahsil there are only two Jats who pay income-tax.

CHAPTER IV.—CROPS.

35. Under the orders communicated in letter No. 4563, dated 17th June 1912, from the Junior Secretary to the Financial Commissioners, the Produce Estimate has been based on the harvests of the years 1892-93 to 1910-11. I regret now that a short recent period was not adopted but it was found impossible to obtain a sufficiently representative series of years and at the same time it was felt that reliance could not be

Period on which the Produce Estimate is based.

will be
of

placed on the continuance of recent conditions under which unirrigated cultivation has superseded irrigated to a considerable extent. The character of the harvests is as follows :—

- 1892-93.—Kharif good : rabi above average : crop failure due to excess of rain.
- 1893-94.—Both harvests good : failure due to excess of rain.
- 1894-95.—Kharif good : some damage done by heavy rainfall and floods in the Degh and river : rabi a little below average as excessive rainfall and hail spoiled the crop.
- 1895-96.—The moonsoon rainfall was above average and the kharif harvest good except in the case of rice which suffered from want of rain in July and again in September : rabi below average : the unirrigated harvest failed through drought.
- 1896-97.—Kharif a little below average : a large area was sown but failure was heavy owing to insufficient rainfall : rabi bad because of drought.
- 1897-98.—Kharif average : rain insufficient : rabi below average : the winter rains were heavy but untimely.
- 1898-99.—Kharif, the best harvest of the series : rabi much below average as the winter rains were very poor.
- 1899-1900.—Kharif and rabi the worst since settlement : the rainfall of the year was 11.31 inches only.
- 1900-01.—Both harvests good : some damage was done by excessive rainfall.
- 1901-02.—Kharif a little below average, though the Kalar and Khadir did fairly well : the rabi was very poor owing to drought.
- 1902-03.—Kharif good : rabi poor : rainfall insufficient.
- 1903-04.—The Darp and Kalar did well in kharif : the Khadir and part of the Dokandi suffered from excessive rain and floods : rabi good but rain and floods did some damage :
- 1904-05.—Kharif a little below average ; crop failure heavy owing to drought : rabi an average harvest except in the Khadir where it was not good : rainfall untimely.
- 1905-06.—Kharif below average on the whole : the Khadir suffered from river floods and the Darp from drought : rabi very good.
- 1906-07.—Kharif a little below average owing to flood and heavy rainfall : the rabi shows well in the crop returns but after girdawari late rains and fierce winds ruined the harvest.
- 1907-08.—A bad year owing to drought : rats caused considerable damage to the kharif crop.
- 1908-09.—Kharif above average though the rainfall was excessive : rabi average.
- 1909-10.—Kharif inferior owing to excess of rain and floods in the Ravi and Degh : rabi good.
- 1910-11.—Kharif poor : the crop failure was heavy owing to the heavy rain : rabi average but this harvest also suffered from excessive rainfall.

The classification of the harvests has been taken mostly from the remarks made at the time in the tahsil note-book. It shows that the kharif harvests are evenly distributed between good and bad with one that may be called average. Good rabi harvests are more infrequent : ten out of the

nineteen were bad or below average and three were about average. Excessive rainfall and floods have been as frequent, though not as serious, as drought.

General remarks on agriculture.

36. The following results are abstracted from statement No. VIII :—

Circle.	PERCENTAGE OF FAILED TO SOWN AREA.			Percentage of cultivated area annually sown.	Percentage of cultivated area annually harvested.
	Kharif.	Rabi.	Total.		
Dokandi	22	18	17	110.1	91.4
Darp	17	16	16	108.4	90.5
Kalar	14	12	13	107.1	93.4
Khadir	19	14	16	111.8	94.3
Tahsil	18	14	15	109.3	92.3

During settlement, at any rate, the estimate of crop failure is on the whole fairly done but in spite of the presence of a strong supervising staff at least two cases have come to light where the crop returns were written up in the patwari's house and the produce estimate based on statistics which are sometimes prepared in this manner is to be received with caution. The figures given above show that the tahsil cannot be regarded as secure since on the average over a seventh of the area sown fails to bear a crop. The proportion of failure is two and a half times as heavy as in Daska, the reason being that only 52 per cent. of the cultivated area is irrigated as against 88 per cent. in the latter tahsil. Cultivation in the Kalar, which depends mainly on well-irrigation, is naturally less precarious than in other circles while the Dokandi, which suffers from the vagaries of the Degh, shows the largest proportion of crop failure. The extent of crop failure over the tahsil varies from 5 to 38 per cent. In point of security the spring harvest is superior although 46 per cent. of the area sown in kharif is irrigated as against 45 per cent. in rabi, but nearly half the kharif irrigation is abi, depending on the uncertain Degh, while in spring practically all the irrigation is done from wells. The area sown fluctuates greatly from year to year, the limits being 157,000 acres in 1899-1900 and 240,000 in the following year. It cannot be said that the fluctuations follow any clear law. Rainfall is, of course, the principal determining cause but in this tahsil where excessive rain is as common as drought it is not the year of heaviest fall that shows the highest sowings. Moderation and timeliness are more important than amount.

Looking at the proportion of the cultivated area that bears a harvest it would appear that the tahsil is more fertile than Sharakpur, but less so than Shakargarh. The Darp and Dokandi, which have the most fertile soil, show worst with regard to the proportion of cultivated area harvested, the reason in the case of the Darp being that it has a very much larger proportion of barani cultivation than any other circle and in the case of the Dokandi that it is liable to suffer from the vicissitudes of the Degh. The area irrigated from wells varies roughly inversely to the rainfall and there is not the same decline in well irrigation as in the Daska tahsil, the fall in recent years being explained mainly by the higher rainfall and by acquisitions for the canal.

37. Statement No. XI shows the changes in cropping since last settlement. The periods selected for comparison are the years 1885-86 to 1889-90 and 1905-06, 1906-07, 1909-10 to 1911-12. The former is that on which Captain Dunlop-Smith appears to have based his produce estimate. The latter has been selected because it resembles the former in rainfall and is representative of recent tendencies. The average rainfall of the former period was 24.41 inches : of the latter 25.65 inches. If 1907-08 had been included in

Changes in cropping.

place of 1905-06 a period exactly resembling the earlier could have been obtained but 1907-08 was abnormally bad.

While the proportion of the cultivated area sown in recent years has been greater than at Settlement, the area that failed to mature is still greater and at last Settlement every acre recorded as cultivated bore a crop whereas now only 97 per cent. of the cultivated area is harvested. The principal reasons of this decrease in efficiency are the decline in population and in the area cultivated by owners. A considerable proportion of the tenants are men who themselves own some land and it is notorious that they first till their own holdings and then attend to the lands they have leased. Consequently an increase of the area cultivated by tenants implies a decrease in the quality of the cultivation. Possibly also patwaries have learned to allow kharaba in sufficient proportion. In the Dokandi alone has the percentage of harvested area increased and this is due to the extension of the Degh's beneficent action.

Kharif cultivation is losing its popularity in Raya as in so many other tahsils, while the European demand for wheat, the rise in the prices of gram and massar, and their easy cultivation have had the effect of diverting attention to rabi crops. In the Dokandi the general tendency towards rabi cultivation has been exaggerated by the spread of silt deposits which have made practicable the cultivation of wheat in places where little but rice would grow before. The Darp was and still is famous for the fine gur produced there but the cultivation of sugarcane in the circle has fallen to half what it used to be. It is remarkable how little the zamindar troubles to think out the reasons for his actions and few could give me any satisfactory explanation for the abandonment of cane cultivation. Dry seasons and damage by white-ants and other insects were the causes most commonly alleged but the former is most certainly incorrect and the latter depends on the former. Even the most intelligent zaildars refuse to accept any other explanation as they maintain that it takes many wheat crops to produce the profit of one cane harvest. The alteration in the area under cane occurred somewhat suddenly in 1897 and since that date no matter how good the rains may have been the figures of the previous years have never been touched. I conclude that decrease of population is the main cause as cane requires a lot of labour. The question has been dealt with at length because of the importance of this crop in the Darp. The only other change that requires notice is the increased area devoted to fodder. Jowar is grown mostly, but by no means exclusively, for fodder purposes in this tahsil. If we include it all among fodder crops 10-15 per cent. of the cultivated area is now devoted to raising fodder as against 6-9 per cent. at Settlement. There has been a rise of 6 per cent. in the total number of cattle and the grazing has not increased in proportion as a considerable part of the area that has gone out of cultivation has been spoiled by the river even for grazing. The proportion of cultivated land devoted to fodder is, however, little over half that obtaining in Daska which means that the cost of cultivation in this tahsil is so far less than in Daska.

The cropping is of a high order as is evident from the annexed statement showing the proportions of the cultivated area bearing the valuable staples, rice, maize, sugarcane, cotton and wheat:—

				Dokandi.	Darp.	Kalar.	Khadir.	Tahsil.
At settlement	...	...	...	65	67	74	67	68
Now	...	...	...	68	60	66	66	65

It is only in the Dokandi that more of the valuable crops is raised now. In the Khadir there has been little change but the other two circles show considerable deterioration.

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38. With regard to the system of cultivation little need be said.

Rice is grown mainly in the Dokandi and Kalar in which circles it is irrigated from wells, from the Degh or from chhambhs or embankments which catch Degh floods and drainage water. Barani rice is generally grown in the line of some drainage channel. In these two circles the valuable mushkan is raised probably almost as much as munjhi or jhona. Inferior kinds are little grown in the tahsil and when cultivated are generally sown broadcast instead of being transplanted from nurseries. A certain amount of dhan is thus sown in the Khadir on silt recently thrown up from the river but generally the rice grown on such land is jhona.

Jowar does not take kindly to the Darp and the people of that tract say that they have constantly to get fresh seed from the Bharari of Sialkot or from the Manjha.

Moth and *maize* are sown early in cotton and cane fields, and cut green for fodder but about half of the moth sown is allowed to ripen. The grain is prized as an ingredient of the "niari" given to horses in hard work. Moth and mash are mainly barani crops. Their straw makes excellent fodder.

Sugarcane.—Katha and dholu are planted together as a rule, both being good gur-producing kinds. The latter gives to gur a light colour that is much appreciated. The other kinds are not much grown but some villages in the Khadir or on its borders produce good ponda which fetches a high price—Rs. 80 per kanal sometimes. It is consumed raw.

Cotton is comparatively little grown in spite of its profitableness. The people say that this is partly a matter of habit, partly due to the fact that cane takes so much of the available water and manure that there is no opportunity for extending the cultivation of cotton.

Wheat.—Vadanak prevails in the Kalar and Dokandi where it gets the irrigation it requires. Elsewhere nikki or Punjabi wheat is chiefly grown. Mona or beardless wheat is also frequently found in the Dokandi. Where Degh water is available wheat is frequently grown in the vadh of rice but the result is generally a very moderate crop.

Barley, as usual, is grown mostly in inferior soils. In the Khadir it frequently lines wheat fields to mark the borders where permanent boundaries are wanting. The crop is often used for fodder purposes in this tahsil but has some value as food because it ripens early and enables the poorer zamindar to tide over the time till his wheat is ready for harvesting.

Gram and *massar* are popular because easily grown and because they do not require irrigation. They are said to be liable to damage by lightning but I am told that the people are losing their fear of this source of injury.

Oilseeds have greatly grown in popularity. Taramira is not found to any extent outside the Dokandi. Rapeseed is generally sown among wheat and used as fodder. The principal rotations are thus :—

Sugarcane, nearly always follows one or two fallows or else a fodder crop and is succeeded either by two fallows and wheat or by one fallow and maize, cotton or even sugarcane. There is not much to choose between the frequency of these alternatives.

Rice is generally grown in the same field year after year. In spring the land lies fallow or grows a fodder crop but in the richer parts of the Dokandi and Kalar rice is not infrequently followed by wheat or barley but the spring crop, so far as my experience goes, is generally a poor one.

Maize as often as not follows wheat and frequently a long series of alternating wheat and maize crops is raised from the one field. This is especially the case in the Khadir. Otherwise it follows either a fodder crop or a fallow. The crop is succeeded by sinjhi or by wheat indifferently but some times massar or barley takes the place of wheat in the succession. A maize field does not often lie fallow after the crop has been reaped.

Cotton is generally preceded and followed by a fallow.

Wheat as a rule follows one or two fallows and is followed by a fallow and then by wheat or by two fallows and a Kharif crop. But sometimes, especially in the Khadir, wheat and maize are sown in regular succession and in the rice-growing tracts wheat and rice frequently follow each other where the land receives a deposit of silt.

In the Khadir, as in the Bet Bela of Daska, double cropping is freely indulged in. The large number of cattle in these circles and the consequent supply of manure may explain the phenomenon but I am not sure that improvidence has not something to do with it.

CHAPTER V.—TENANCIES AND RENTS.

39. As in Daska the proportion of cultivated area tilled by owners has fallen 4 per cent. and this in spite

Cultivating occupancy.

of the fact that the bigger land-holders in all circles complain of the scarcity of tenants and declare that they have to resort to flattery and offer lenient terms in order to obtain them. At least 2 per cent. of the decrease is accounted for by the emigration of owners to the canal colonies; the area cultivated at revenue rates has risen by that amount and emigrants usually leave their lands in the hands of relations or friends who only pay the land revenue. The remaining 2 per cent. is held by tenants paying kind rents and doubtless a good deal of it belongs to emigrés or to owners who have been left widowed or fatherless through the effects of plague. Although the reduction in the area tilled by owners has been greatest in the Darp 49 per cent. of the cultivated land of that circle is still in their hands while elsewhere the proportion is only 45 or 46 per cent. Occupancy tenants hold 6 per cent. of the cultivated land as at last Settlement. They are mainly Arains, village menials, religious or charitable dependents of the landlords.

Tenants-at-will paying rent hold 46 per cent. of the cultivated land. They are generally zamindars whose holdings have been alienated or are too small, Arains or village menials.

40. The prevalence of the various forms of rent is shown in the following table:—

Prevalence of the various forms of rent.

Percentage of area cultivated by tenants-at-will paying rent.

Circle.	Year.	Batai.	Chakota.	Cash.	Total.
Dokandi ...	{ 1892-93 ...	25.0	2.7	13.4	41.1
	{ 1911-12 ...	30.7	2.0	11.3	44.0
Darp ...	{ 1892-93 ...	23.0	4.0	8.6	35.6
	{ 1911-12 ...	30.8	3.0	5.3	39.2
Kalar ...	{ 1892-93 ...	18.3	4.5	19.2	42.0
	{ 1911-12 ...	21.8	4.2	14.1	40.1
Khadir ...	{ 1892-93 ...	28.1	3.8	12.0	43.9
	{ 1911-12 ...	31.5	3.3	9.0	43.8
Total ...	{ 1892-93 ...	23.7	3.7	13.0	40.4
	{ 1911-12 ...	28.8	3.1	9.7	41.6

NOTE.—The percentages have been taken on the total cultivated area given in Statement No. 7 of the circle note-books.

The main features of this statement are the increase of 5 per cent. in the proportion of cultivated area on which batai rents are paid; the decrease of

3 per cent. in the proportion paying cash rents, while that on which chakota is paid has risen very slightly and is still insignificant.

The increased prevalence of batai rents probably shows that the landlord is in a stronger position than he used to be, but owing to the insecurity of agriculture in this tahsil tenants also like this form of rent. It is admitted, however, by the leading men of the tahsil that a division of the produce is the most profitable method of taking rent from the landlord's point of view and that cash rents are unpopular because they cannot be raised as fast as prices rise. Chakota is comparatively little taken, the explanation usually given being that it is not the custom. It is also said that tenants do not like paying lump grain rents because of the risk of loss in a bad year. In Daska where 23 per cent. of the cultivated land pays chakota the crop failure averages 6 per cent. only : in Raya it is 15.

41. As in Daska zabti rents are taken on a very trifling area—163 acres only. In view of the remarks in paragraph 12 of Sir Denzil Ibbetson's Memorandum on the last Assessment Report I made careful enquiry with regard to the existence of zabti rates but everywhere met with the answer that they were not taken and the people were greatly astonished to hear that they had been taken at last Settlement. In the case of sugarcane the landlord trusts tenants whom he knows to be trustworthy and either puts on a " muhafiz " to supervise the operations of those he distrusts or else takes his share by appraisement. The produce of cotton is divided daily as the crop is plucked. Such zabti rents as exist are taken at the following rates :—

				Rs.	Rs.
Dokandi	...	...	Cane	...	16
Darp	...	...	Cotton	...	13
			Cane	...	12 to 24
Khadir	...	...	Tobacco	...	15

42. In the following statement are compared the proportions in which the various rates of batai were paid in 1892-93 and 1911-12 :—

Period.	Total area paying batai.	One-half.	Two-fifths.	One-third.	Less than one-third.	Average gross rent.	Circle.
1892-93	13,537	53	12	35	...	43	Dokandi.
1911-12	16,353	55	22	21	1	44	
1892-93	12,817	100	...	...	...	50	Darp
1911-12	17,190	95	5	...	...	49	
1892-93	7,743	72	6	18	4	46	Kalar.
1911-12	9,347	64	5	29	2	44	
1892-93	12,139	93	2	5	...	49	Khadir.
1911-12	12,027	93	2	5	...	49	
1892-93	46,236	80	5	14	1	47	Tahsil.
1911-12	54,917	77	10	12	1	47	

In the Khadir there has been no change : in the Dokandi a considerable increase has occurred in the proportion paying the higher rates because the spread of Degh silt has increased the fertility of the tract : in the Darp and Kalar the reverse has occurred probably because of the scarcity of tenants for which, in the Darp at any rate, there has been no compensation in increased fertility. The rate at which batai is taken depends to a considerable extent on the difficulty and expense of cultivation. For this reason in some parts it is the custom to take a two-fifths share of kharif crops and especially of cane while one-half is taken in rabi. Again, in those parts of the Dokandi, such as Baddomalhi, where rice cultivation is facilitated by a fairly constant supply from the Degh the rent for rice is one-half, while in other villages where the crop has to be laboriously nursed and irrigation can only be had from tanks or other precarious sources, the rate is two-fifths or one-third. Over the tahsil as a whole the landlord's share of the produce after deduction of menials' dues in 47 per cent. as at last Settlement. This is a little less than in the neighbouring tahsils of Shakargarh and Ajnala but much more than in Sharakpur.

43. Cash rents are taken as a rule by mortgagees who are not agriculturists, by widows and minors, absentees or other persons who for one

Cash rents.
reason or another cannot secure full value from a batai rent. In Raya it is, if anything, the better lands that pay this form of rent mainly because non-agriculturist mortgagees and purchasers take care to select good soil. This class of landlord is notoriously given to wrack-renting and for these reasons cash rents are apt to range high. On the other hand it is alleged that landlords sometimes take them from tenants who are lazy or whom they cannot trust to play straight over a division of the produce. The hardworking tenant likes a cash rent as it lets him enjoy the full benefit of his toil: the shirker prefers paying a share of the produce. Thus the reasons for taking cash rents in this tahsil are varied and affect their pitch in contrary ways but they are on the whole too high to be a fair index of the renting value of the land. This is especially true of the Khadir where cash rents are frequently taken on wells near the dwelling-site of large villages such as Daud, Mirowal and Passianwala. The tenants in such cases are generally Arains and the rates are extraordinarily high. They have been omitted from Statement No. VII B. In the Dokandi, however, it is not the best lands that pay cash as a rule and the tendency is to take batai more and more on the better soils. For this reason the rise in cash rents in this circle is not commensurate with its increase in fertility. Except in the Darp cash rents are taken on a very small area of unirrigated soil and the rates are therefore not a fair guide.

44. Statement No. VII B. shows the normal cash rents paid at present. Abnormal rates were excluded first by Naib Tahsildars during the preparation of village assessment statements and later by myself as each village was inspected. In paragraph 70 of the last Report the rates supposed to exist at Settlement were tabulated but in the 18th paragraph of his additional memorandum Captain Dunlop Smith himself remarked "It cannot be said that these statistics are a reliable guide" and he gave good reasons for distrusting them. In the compilation no attempt was made to exclude abnormal rates and rents at revenue rates with or without malikana were also included. Accordingly it seems useless to compare the rents shown in Statement No. VII B, with Captain Dunlop Smith's figures and my attempt to do so brought out such improbable results that I do not propose to report them. Instead I have taken for comparison the figures in Statement No. 7 of the Circle Note-books for 1892-93 and 1911-12. In neither case, of course, are abnormal rents excluded and I think the comparison a fair one. Unfortunately, rents for irrigated and unirrigated lands were not entered separately in the former year and only the averages for all soils can be reported. The results are shown in the accompanying form:—

Area under cash rents.

Assessment circle.	Period.	Irrigated.	Unirrigated.	Total.	Rate per acre.	Rise per cent.
Dokandi	1892-93	4,699	2,518	7,217	Rs. A. P. 4 14 0	18
	1911-12	4,145	1,920	6,065	5 12 0	
	1892-93	1,570	3,203	4,773	5 8 0	
Darp	1911-12	1,050	1,935	2,983	6 8 0	18
	1892-93	6,935	1,153	8,088	4 9 0	
	1911-12	5,472	578	6,050	5 10 0	
Kalar	1892-93	2,470	2,704	5,174	5 9 0	23
	1911-12	2,126	1,335	3,461	7 14 0	
	1892-93	15,674	9,577	25,251	5 0 6	
Khadir	1911-12	12,793	5,768	18,561	6 5 4	42
	1892-93	15,674	9,577	25,251	5 0 6	
	1911-12	12,793	5,768	18,561	6 5 4	
Tahsil	1892-93	15,674	9,577	25,251	5 0 6	25
	1911-12	12,793	5,768	18,561	6 5 4	
	1892-93	15,674	9,577	25,251	5 0 6	

The great rise in the Khadir is due mainly to the great increase in the proportion of irrigated land under cash rents. In the other circles also there

has been a slight increase in that proportion. The rise must therefore be discounted to that extent. I would put it at about 22 or 23 per cent. for the tahsil.

45. Chakota rents are taken in the same circumstances as cash but they are not found on the "niain" lands of large villages as a rule. Zamindar landlords remit a portion in bad seasons but non-agriculturists try to recover the whole sooner or later. The prevalence of this form of rent has slightly decreased and it is only taken on 3.1 per cent. of the cultivated area. In the Kalar it is most popular but even there only 4.2 per cent. of the cultivated land is leased on chakota. The usual form of this rent in Raya is a fixed amount of wheat and it is not usual to take money along with it. In Statement No. VIIC are shown the prevailing normal rates, commuted at sanctioned prices. A comparison with those given in paragraph 75 of the last report gives hopeless results—a fall of from 13 to 30 per cent. in all circles except the Khadir where there has been a rise of 2 per cent. The fall over the tahsil as a whole is 17 per cent. I conclude that the chakota rents given in the last Assessment Report are not correct. In any case the area under chakota rents is so small that they are of little importance for assessment purposes.

CHAPTER VI.—HALF ASSETS ESTIMATE.

46. It is with considerable mis-giving that I approach the subject of yields on account of the criticism to which Captain Dunlop Smith's original estimates were subjected. Even the rates finally proposed in paragraph 4 of the Settlement Officer's additional Memorandum were regarded by no less an authority than Sir Denzil Ibbetson as generally full and in the case of rice distinctly high, though he regarded the cotton estimate as low. Sir Denzil further made deductions from the produce estimate for the inferior yield of dofalsi crops and for the proportion of certain crops used as fodder. In view of his opinion and that of other authorities who reviewed the last Assessment Report I have exercised great caution in raising the yields assumed previously though they are light in comparison with those adopted in the case of Daska tahsil. In statement No. XII are shown the details on which the present estimates are based. In a recent tour in the Raya tahsil I consulted the leading agriculturists assembled together on this subject. Their opinions were almost as conflicting as those of the ordinary zamindars who were questioned during village inspections and I conclude that they either have no fixed idea of the average yields of their land or are very skilful at concealing it. As a rule their answers were in terms of the mani and no fraction less than a half was considered. As a half mani weighs 4 to 4½ maunds in the case of wheat it is obvious that estimates of this kind have no claim to exactitude. Little help has been received therefore from the people themselves in arriving at a fair idea of average outturns. No crop experiments were made in 1911 as hardly any member of the staff had arrived till January 1912. Rabi 1912 was an exceptionally good harvest: Kharif 1912 and Rabi 1913 were poor especially in the Darp which showed little of its traditional power of retaining moisture in either harvest. As a rule, however, the results of crop experiments would justify my going higher than I have done in my proposals but I fully agree with what is said in paragraph 6 of Sir Denzil Ibbetson's note *viz.*, that in making deductions from experiments one is always apt to take the yield of an average field rather than the average yield of the fields. I also think that there is an unconscious tendency to select the better fields for experiment, that is, those which show a nice level crop throughout. For all these reasons I have kept closely to Captain Dunlop Smith's revised estimates and will only notice below the cases in which I have departed therefrom.

47. *Maise*.—Considering the outturns assumed in neighbouring circles and the results of crop experiments I have raised the yield to 10 maunds for chahi and 9 maunds for sailab in the Khadir : in the Darp the chahi estimate has been raised half a maund : in the Kalar by one maund : in the Dokandi I think 11 maunds sufficient for chahi but the same should be assumed for sailab lands.

Sugarcane.—The yield of barani cane has been reduced by 5 maunds in the Darp. I have only seen a miserable crop in this circle and consider 16 maunds an ample outturn. Very little has been expressed in the last two years and the crop experiment results are not representative.

Cotton.—Barani yields have been slightly raised in three circles : 2 maunds is nowhere too high a yield for cotton.

Pulses are grown mainly on unirrigated lands. Owing to the early failure of the rains in 1912 no experiments were made in these crops but I have made enquiries as to the yield and have watched the grain of mash being weighed in some threshing floors of Raya and think that 3 maunds is a fair estimate.

Wheat.—Barani wheat I have raised to 6 maunds in the Khadir and regard that as low enough : in the Darp I have reduced it to 8 maunds in view of my experience last spring.

Barley.—Except in the Darp and Dokandi the estimate for this crop has been raised to the level of that for wheat. In the circles named there is a considerable difference between the fertility of the lands on which wheat and barley are grown and I think it right to keep down the outturn of barley below that of wheat.

Gram.—I have raised the yields of this crop because those assumed at last Settlement seem to me low. More attention is paid to the crop now-a-days and I think it is possibly grown on better land.

Massar.—There is little to go on in estimating the yield of this crop, but the Raya zaildars assert that it is as heavy as, if not heavier than, that of gram, so I have assumed it to be the same.

Sesamum is grown mainly on small patches of unirrigated land in the Darp and Khadir. Few experiments have been made but the yields assumed are, I think, fair.

Toria and linseed.—Experiments in these crops have been made on too small an area to be of much value and I have adopted the yields assumed for neighbouring circles, raising it in the case of chahi and sailab land in the Dokandi because of its greater fertility. In the Kalar 2 maunds is quite enough to assume for barani linseed considering the infertile character of the soil.

Rapeseed is used almost entirely as fodder and is sown mostly among wheat to be taken up before the latter crop ripens. In the returns no distinction is made between it and taramira and I have treated both as fodder.

For *Tobacco* the same yield has been assumed as in Daska. I have lowered it by one maund in the case of the Kalar circle. I propose to value other food crops (including bajra) and fodder at Rs. 10 per acre. Vegetables, fruits, spices and melons at Rs. 24 per acre and other non-food crops at Rs. 15 per acre. These were the rates assumed in the case of Daska. Among fodder crops are included jowar or chari, which is consumed to a certain extent by the zaildars of Raya but is mainly given to the cattle.

48. In the following table are compared the prices adopted at last settlement and those sanctioned in the Financial Commissioner's letter No. 7676, dated 1st November 1912 :—

Crop.						At last Settlement	Now.	Rise per cent.
Wheat	...	...	...	...	...	25	34	36
Barley	...	...	...	...	...	15	22	68
Gram	...	...	...	...	...	18	28	56
Massar	...	...	...	...	...	...	26	...
Toria	...	...	...	...	...	...	57	...
Rice	...	...	...	...	...	21	34	62
Maize	...	...	...	...	...	20	27	35
Gur	...	...	...	...	...	43	53	23
Cotton	...	...	...	...	...	...	80	...
Bajra	...	...	...	...	...	...	25	...
Moth	...	...	...	...	...	...	30	...
Mung and Mash	...	...	...	...	...	...	36	...
Jowar	...	...	...	...	...	18	...	...
Tobacco	...	...	...	...	...	...	70	...

At last Settlement only seven crops, including jowar, were considered in detail in framing the produce estimate. All others were lumped together under the heading "others" and valued at 25·6 annas per maund, their yield being assumed at 6 maunds to the acre. Captain Dunlop Smith deduced his commutation prices by a process different from that now adopted and in consequence I have been directed to take Gazette prices as the basis in calculating the effective rise since last Settlement. The calculation is embodied in the following table: it is based on the figures of the 10 years preceding Settlement in each case :—

1	2	3	4	5	6	7
Crops.	Percentage on total area of crops.	Yield per acre in maunds.	Total yield in maunds.	Rise of price per cent.	Multiple of column 5 by 4	General rise
Rice	7	13	91	46	4,186	
Maize	6	10	60	44	2,640	
Gur	3	16	48	44	2,112	
Cotton	2	4	8	63	504	
Wheat	47	9	423	51	21,573	
Barley	6	8	48	65	3,120	
Gram	3	6	18	60	1,080	
Total	74	...	696	53½	35,215	50·6

49. In this tahsil all agricultural servants including the athri chuhra take their dues before division of the produce. I made special enquiries about the athri chuhra and am satisfied that in the cases where a tenant does employ one his share is paid from the common heap. The demands of agricultural servants are increasing and their dues are on the rise at present and therefore a little uncertain. There are also differences in custom from village to village and often owner to owner but the common rates are fairly well known and are a moderately safe guide.

Slight differences exist in the practice of different circles. For instance, it is only in the Kalar and Dokandi that artisans get any share of the rice and in the Dokandi and Khadir they get some berera. But as the dues are somewhat vague and the main items are the same in all circles it is best to make a single calculation for the tahsil. These deductions are generally reckoned by ploughs but on well lands they are sometimes reckoned by the well.

Smith, carpenter and potter generally take the same, though the smith does not always get a full share. The rule is one sheaf of wheat and maize

per plough with one daropa of each as "phakka," that is, 10 topas of wheat and maize for each artisan. They also get 2 sers gur or else some unrefined sugar and sugarcane juice and in addition the last plucking of the cotton. Sometimes an additional 2 sers of cotton is given to each.

Where dues are paid by the well the potter and carpenter generally take 12 sheaves of wheat and the smith about half that but sometimes the two former are allowed to cultivate a kanal free of rent and then they receive 8 instead of 12 sheaves.

The *Athri Chuhra* takes one kachcha maund per mani of all grains along with a pot of cane-juice besides his food and clothing. Allowing one athri to every four cultivators his dues absorb a full 2 per cent. of the total produce.

The *Chuhra Sepi* (or khula sepi) takes 8 to 12 topas per mani—his demands are increasing and amount to from 4 to 5 per cent. of all grains.

The *Udhawa* or winnower gets 4 to 6 topas per mani of the wheat, barley and rice and sometimes 2 topas per mani of toria. His claims absorb 2 to 3 per cent. of these grains.

The Gur cooker is given from $\frac{1}{16}$ th to $\frac{1}{8}$ th of the gur with a pot of juice and in addition from a half to one ser daily of coarse sugar. This means a deduction of over 5 per cent. of the gur produced.

In the Raya tahsil reapers are not paid so liberally as in Daska. They get one sheaf of wheat, barley or rice for every two days' work and every day they take a small quantity, known as "makhra", or an armful, in place of food. In the Kalar 4 topas or 6 sers of rice are paid daily but this comes to much the same thing. A deduction of 2 per cent. from the wheat, barley and rice is sufficient for the reapers' dues in this tahsil.

A produce estimate has been worked out for a hundred acres and the value of the artisans', menials' and reapers' dues has been compared with it. The results is that they are found to absorb 17 per cent. on well lands and 13 per cent. on other soils. As sufficient allowance has perhaps not been made for the extent to which small owners do without help I propose to assume 16 per cent. on irrigated and 12 per cent. on unirrigated soils. Captain Dunlop Smith deducted 16 per cent. on account of menials' dues on well lands and 10 per cent. on sailab and barani soils, except in the Darp where 12 per cent. was deducted on barani, and in the Khadir where 14 per cent. was allowed on unirrigated soils. His description of the dues differs considerably from mine and a comparison is hardly possible. Owing to the heavier yields assumed in Daska, its larger well areas and the fact that the athri is not paid from the common heap in that tahsil the proportion of artisans' and menials' dues to the gross produce worked out lighter, viz., 12 and 8 per cent. Agriculture is easier in Raya but holdings—if the culturable waste is included—are larger and there is a considerable proportion of Rajput owners and big landlords who give freely to their agricultural servants. The cost of cultivation assumed in this tahsil is much the same as in the neighbouring tahsil of Ajnala. For the sake of simplicity I have made the deduction at uniform rates from all crops but in reality none should be made in the case of oil-seeds, pulses, gram and certain other crops while wheat, rice and barley should bear a greater share of the burden than is actually laid upon them.

50. With regard to straw the general rule is that a half share is taken in the Darp and Khadir, one-third to two-fifths in the Dokandi and none in the Kalar. But there are a good many villages in the three former circles where no straw is taken and even where it is the custom to share straw there are often exceptions within the village. It is safer therefore to assume one-third in the Darp and Khadir, one-fourth in the Dokandi and none in the Kalar. It is somewhat strange that straw should be shared half and half in the Raya Darp while none is taken in the superior Darp of Shakargarh. In the case of wheat and barley the weight of straw is assumed to be the same as that of the grain: in the case of gram, massar and the pulses it is taken as half. Three maunds to the rupee is a fair value to assume.

51. In Statement No. XIII A an estimate of the half-net assets has been worked out for each circle on the data determined in the preceding paragraphs. The results are summarised below and compared with Captain Dunlop Smith's revised estimate as given in column A, Statement No. V, paragraph 16 of Sir Denzil Ibbetson's Memorandum :—

Circle.						Last Settlement.	Now.	Rise per cent.
Dokandi	...	...	...	...	...	1,80,295	2,28,770	75
Darp	...	...	...	...	...	1,82,411	2,12,352	16
Kalar	...	...	...	...	...	1,01,985	1,32,683	30
Khadir	...	...	...	...	...	98,042	1,48,248	51
Tahsil	...	...	...	...	...	5,12,733	7,22,058	41

The comparison is not quite satisfactory as the estimate of last Settlement was made for a holding of 100 acres only and the result was then applied to the whole area. However, this method should give approximately the same results as that now adopted provided it were correctly carried out.

While the effective rise in prices is nearly 51 per cent. there has been a rise of 41 per cent. only in the produce estimate in spite of the fact that no allowance was made for straw at last Settlement and that I have raised the yields assumed in several cases, reducing only in the case of chahi maize in the Dokandi, barani sugar and wheat grown in the Darp and also in the case of most of the miscellaneous crops which were lumped together at last Settlement under the title of "others". But the harvested area in the period on which Captain Dunlop Smith based his estimate was 10,539 acres or 6 per cent. greater than that now assumed and the valuable kharif crops bore a larger proportion to the total harvest than they now do. As between the different circles the rise in the estimate has been uneven because of changes in their harvested area and in the proportions of the produce taken by the landlord. In the Darp, Khadir and Kalar the harvested area has declined 10, 8 and 7 per cent. respectively, while in the Dokandi it has increased by 4 per cent. Again the landlord's share of the produce has decreased in the Darp and Kalar; has remained the same in the Khadir but has increased in the Dokandi. These considerations point to the possibility of taking a larger enhancement in the Dokandi than elsewhere and to the necessity of caution in dealing with the Darp.

52. It is hardly necessary to put into the body of this report the calculation of half-net assets based on cash and chakota rents. Two such estimates will be found in statements

Nos. XIII B and XIII C, the first based on pure cash rents and the second on chakota rents. I have already discussed these rents in paragraphs 43 and 45 and the conclusion with regard to them is that they are a little too high to be a fair guide to the renting value of the average land. In applying cash and chakota rents to the present area a deduction of one per cent. has been made to cover the remissions that are frequently made in bad seasons by landlords who are themselves agriculturists: others do not as a rule make such remissions.

53. In the following statement are compared the various estimates of the half-net-assets :—

Comparison between various estimates of the half-net assets.

Circle.						Batai.	Cash.	Chakota.	Based on sale prices.
Dokandi	...	...	...	...	...	2,28,770	1,50,788	1,76,775	2,04,155
Darp	...	...	...	...	...	2,12,352	1,82,190	2,08,631	2,41,469
Kalar	...	...	...	...	...	1,32,688	1,18,170	1,41,910	1,65,890
Khadir	...	...	...	...	...	1,48,248	1,45,276	1,63,050	1,50,405
Tahsil	...	...	...	...	...	7,22,058	5,96,424	6,90,366	7,61,919

The produce estimate is for a cultivated area 3,103 acres or 1.6 per cent.

greater than that to which cash and chakota rents have been applied. But apart from particular considerations of this kind I believe that in this district any produce estimate framed on the ordinary lines is sure to be in excess of the estimate given by cash or chakota rents if they are taken on normal land at an ordinary competitive rate. My reasons for thinking so are set out in paragraph 47 of the Daska Report and they apply equally to Raya. They amount to what Sir Denzil Ibbetson has said in paragraph 26 of his Memorandum on the last Report "Full batai seldom or never reaches the landlord" and I would repeat one of the arguments used in the Daska Report *viz.*, that it is not an uncommon practice to allow the tenant to cultivate a field or two with fodder crops for the support of his cattle without taking any equivalent in the way of rent therefor.

54. The batai estimate and the estimate based on the sale price of land

The true half-net assets.

I regard as too speculative to be final guides : chakota is taken on too small

an area, and that of good land, to afford an accurate test of the true half-net assets : cash rents are taken on the better soils and although abnormal rates have been eliminated they are, except on irrigated soils in the Dokandi, too high to be applied without modification to the whole cultivated area. Accordingly, I think that the true half net assets lies somewhere below the cash rent estimate. How far it is difficult to say but I would put it at about Rs. 5,50,000, the sum adopted for Daska where the batai estimate worked out just Rs. 2,000 higher than in Raya but in the case of the former tahsil the average cultivated area of the selected years was 9 per cent. higher than the present cultivated area while in the latter it is only 1.6 per cent. higher. By combining the batai, cash and chakota estimates in the proportions in which these rents are taken and reducing the result to bring out the half-net assets which I think correct for the tahsil I get the following estimate of half-net assets for each circles :—

					Rs.
Dokandi	...	...	...	...	1,64,000
Darp ...	...	...	...	...	1,65,000
Kalar	...	...	...	...	1,02,000
Khadir	...	...	...	...	1,19,000
					<hr/>
			Tahsil	...	5,50,000
					<hr/>

Cash rents for irrigated soils in the Dokandi are below the real renting value of the land while in the Khadir they are taken mainly in the better villages. In the Kalar there has been an increase of 2.2 per cent. in the cultivated area while in the Khadir there has been a decrease of nearly 11 per cent. This implies that the batai estimate based on 19 years is low for the Kalar and too high for the Khadir. For these reasons I would reduce the Khadir estimate by Rs. 2,000 and add Rs. 1,000 on to the Dokandi and Kalar estimate, leaving the result as below :—

					Rs.
Dokandi	...	...	...	...	1,65,000
Darp	...	...	...	...	1,65,000
Kalar	...	...	...	...	1,03,000
Khadir	...	...	...	...	1,17,000
					<hr/>
			Tahsil	...	5,50,000
					<hr/>

Captain Dunlop Smith framed his theoretical half net assets mechanically by combining the rates deduced from his batai, cash and lump rents in the proportion in which they were supposed to prevail. As his cash and lump rent statistics were hopelessly unreliable I refrain from making any comparison between his estimate and mine.

CHAPTER VII.—ASSESSMENT.

Considerations affecting the assessment.

55. The following are the principal statistics bearing on the assessments :—

	Dokandi.	Darp.	Kalar.	Khadir.	Tahsil.
Percentage of total area cultivated ..	61	88	47	56	61
Increase or decrease per cent. in cultivated area since 1892-93	-7	-2	2.2	-10.7	-2.1
Percentage of cultivated area irrigated ...	68	31	79	31	52
Percentage of cultivated area sailab ...	15	1	2	41	13
Percentage of cultivated area barani ...	17	68	19	28	35
Increase in the number of wells in use or fit for use.	177	311	146	201	835
Average chahi area per well in use ...	19	15	20	14	...
Percentage of cultivated area annually harvested.	91	91	98	94	92
Percentage of crop failure on cultivated area.	15	14	13	19	15
Percentage of cultivated area bearing harvests of rice, maize, sugarcane, cotton and wheat.	68	60	66	66	65
Population per square mile cultivated ...	593	683	676	676	652
Average cultivated area per owner, acres	8.9	5.9	6.6	5.8	6.5
Percentage of cultivated area sold since Settlement.	7	3	5	5	5
Average price per acre in 1907-1912 ...	163	163	142	151	155
Percentage of cultivated area now under mortgage.	21	21	22	17	20
Average consideration per acre, Rs. ...	99	110	107	115	109
Percentage of cultivated area mortgaged to non-agriculturists.	8	8	8	7	8
Rise in cash rents, per cent. ...	18	18	23	42	25
Present assessment, Rs. ...	87,246	1,07,799	64,801	63,731	3,23,577
Estimated half-net assets, Rs. ...	1,64,000	1,65,000	1,02,000	1,19,000	5,50,000

The question now to be determined is whether the revenue can be raised and if so, how far. In favour of enhancement is the fact that outside the Khadir the cultivated area has increased by 409 acres and the decrease in the Khadir has been allowed for in dialluvion assessments. This trifling increase, however, has occurred in the infertile Kalar only. Wells have increased by 835 and the well-irrigated area is now everywhere greater than at Settlement though in the Darp the increase is hardly appreciable. The area flooded by the Degh has also extended considerably and the loss in abi irrigation is much more than counterbalanced by the gain in chahi and in Degh sailab. Congestion of population has been relieved and the people now have more opportunities of supplementing their income than they had 20 years ago. The value of land has risen enormously. Grain fetches nearly 51 per cent. more than at Settlement and cash rents have risen about 23 per cent. Part of the tahsil is to receive irrigation from the Raya Branch and tenants will be attracted at any rate to the areas affected.

Against these arguments are to be put the increased cost of living and of cultivation, including in the latter the higher demands of agricultural servants and the cost of cattle and of wells. The proportion of increase in the irrigated area has been much less than in the number of wells and this implies a greatly enhanced cost of well cultivation. The proportion of cultivated area annually matured has fallen: the more valuable crops occupy 3 per cent. less of the cultivated land while fodder takes a much larger place than formerly. The communications of the tahsil are unusually bad and form a serious obstacle to the economical marketing of produce. In spite of the relief of pressure on the soil each shareholder has less land to live on than at Settlement. Finally, a fifth of the cultivated area is burdened by mortgage and the mortgage-debt is heavy and still increasing.

56. As to the extent to which the revenue can be raised I think that the rise in cash rents is the safest guide. If the tahsil had been under-assessed at Settlement a greater rise might have been proposed but considering its fiscal history as given in paragraph 19 I do not think that the assessment can definitely be described as light though it is not too heavy. In this connection I would invite attention to Sir Denzil Ibbetson's remarks in paragraph 27 of his Memorandum. My own experience confirms his forecast that the present assessment is "very distinctly, though not perhaps very greatly, higher than" that of Daska.

The same.

In asking the sanction of the Government of India for the re-assessment of the district the Lieutenant-Governor expressed the opinion that it would probably not be safe to take a greater enhancement than 23 per cent. This, of course, was not a final opinion but I am bound to consider it in framing my proposals.

57. It may be useful to make a comparison between the circles of the Raya tahsil and the nearest circles resembling them which have recently come under re-settlement :—

Detail.	Dokandi.	Sharakpur Rohi	Darp.	Shakargah Darp.	Kalar.	Sharakpur K. Irathi.	Khadir.	Ajula Sailab.
Percentage of total area cultivated	61	24	88	79	47	38	56	51
Percentage of cultivated area irrigated.	68	75	81	14.8	79	75	31	23
Percentage of cultivated area annually harvested.	91	81	91	10.1	93	66	94	91
Percentage of crop failure on cultivated area.	15	14	14	...	13	13	19	...
Percentage of crop failure on sown area.	...	...	16	12	...	...	16	19
Percentage of cultivated area bearing harvests of wheat, rice, maize, sugarcane and cotton.	68	42	60	...	66	37	66	...
Percentage of matured area under the same crops.	...	...	60	54	...	...	68	...
Average cultivated area per owner	8.9	22	5.9	5.5	6.6	12	5.8	3.5
Percentage of cultivated area sold since Settlement.	7	12.5	3	2	5	7.5	5	8.5
Average price per acre for identical recent periods.	119	60	142	138	108	53	147	149
Percentage of cultivated area now under mortgage.	21	10	21	27	22	13	17	20.5
Average mortgage price for identical recent periods.	95	36	121	134	102	35	122	103
Average cash rent	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
...	...	...	6 12 8	7 7 0	...	...	...	5 15 7
Chahi	2 2 0	1 2 0	2 8 0	3 1 0	1 13 0	0 12 6	2 1 0	2 6 0
Abi ...	...	1 8 0	...	...	...	...	...	...
Nahri	...	...	...	...	...	...	...	1 14 0
Sailab	1 14 0	...	...	1 14 0	...	...	1 12 0	1 10 0
Barani	1 0 0	0 8 0	1 14 0	2 2 0 2 0 0 1 10 0 1 2 0 2 0 0	0 15 0	0 8 0	1 6 0	1 3 0
Chahi	2 4 0	1 6 0	3 5 0	13 0	2 0 0	1 0 0	2 14 0	2 10 0
Abi ...	1 10 0	1 12 0	3 0 0	...	1 7 0	1 0 0	2 14 0	1 3 0
Nahri	...	2 4 0*	...	...	...	2 0 0*	...	2 0 0
Sailab	2 8 0	...	3 0 0	8 0	1 7 0	0 12 0	1 15 0	1 8 0
Barani	1 8 0	1 0 0	1 12 0	2 6 0 1 10 0 1 2 0	1 0 0	0 12 0	1 7 0	1 3 0

* Per acre matured.

The result is surprisingly favourable to the Raya tahsil but in one or two important respects it shows up badly. Agriculture in the Raya Darp is less successful than in Shakargarh though the proportion of valuable crops grown is larger. Moreover cash rents are lower in the former circle than in the latter. I do not know any of the neighbouring circles sufficiently to express an opinion as to their fertility relatively to Raya but it is generally believed that the Raya Darp is distinctly inferior to the Gurdaspur Darp. The actual riverain villages of Ajnala seemed to me as good as their neighbours in Raya, but a little away from the river I think that the Ajnala villages are inferior. This opinion, however, I give with diffidence as I have only once passed through a small portion of the Sailab circle. The new Gujranwala rates are of no use as a guide: they are below, or as low as, the present Sialkot rates. The Khadir can bear a chahi rate fully as high as that of Ajnala but I would not distribute the assessment in the same proportions as in that tahsil. The comparison with neighbouring circles does not, then, yield very useful results but as the information contained therein may be required by higher authority I leave it as part of this report.

58. My conclusion is that as the present assessment is not clearly a light one it would be unsafe to raise it higher than the rise in cash rents

Proposed enhancement.

for the whole tahsil and that rise, I estimate at 22 or 23 per cent. I therefore propose an assessment of Rs. 3,95,000 which is a trifle over 22 per cent above the present demand and is 72 per cent. of the estimated true half-net assets. This enhancement involves a higher assessment in the Dokandi and Knadir than I proposed during village inspections: in the Kalar it comes out about the same: in the Darp I can make no comparison as it was the first circle inspected and I had not adopted a satisfactory standard. I regard the proposed assessment as a full one.

59. In distributing the assessment over the various circles, the same

Distribution of the assessment among circles

plan has been adopted as in the case of the Daska tahsil: that is to say, the existing assessment has been raised in proportion to the rise in prices and then reduced so as to bring out the required total for the tahsil. The result has then been combined with the reduced half-net assets. This process gives slightly too high a figure for the Khadir and Rs. 500 has been added to the Kalar assessment to equalize matters. The new demand thus obtained is:—

				Rs.
Dokandi	...	...	...	1,13,000
Darp	...	...	...	1,25,000
Kalar	...	...	...	77,000
Khadir	...	...	...	89,000
Tahsil	...	...	...	3,95,000

60. There are three possible methods of distributing the assessment

Evolution of soil rates in the Dokandi.

over soils (1) by following the proportions accepted in the bachh of the expiring Settlement: (2) by deducing rates from the produce estimate: (3) by following the proportions given by cash rents.

The first test gives a proportion of 1.35 to 1 between irrigated and un-irrigated soils in the 41 villages where comparison is possible. The ratio is, I think, too low to be of practical use.

The second method is applied by ascertaining from the area statement given in the note-book the average crops raised per acre on each class of land. A hundred acres of chahi land produce 98 or 99 acres of crops but the average area of chahi crops is only 73 per cent. of the average chahi area and the balance is constituted as follows:—

				Acres.
Abi crops	...	...	...	9
Sailab	...	...	...	2
Barani	...	...	...	15

These figures are deduced from a comparison between the average area of crops of all kinds grown on each class of soil and the area of crops of the

same class, assuming that abi, sailab and barani soils only bear crops of the same description. For example the area statement shows that 9,960 acres of barani land grew 8,743 acres of crops which I assume to be barani : but the total area of barani crops in the circle is 13,596 acres so that 4,853 acres of barani crops have to be ascribed to chahi soil.

The next process is to reduce the incidence per acre matured given in the produce estimate for each class of crops in the proportion that obtains between that estimate and the proposed demand. Thereafter this reduced rate is applied to the crops grown per acre on each soil. An acre of barani land produces .88 acre of barani crops and the reduced incidence per acre of barani crops is Re. 1-8-0. Therefore the theoretical rate for barani land is Re. 1-8-0 multiplied by .88 or Re. 1-5-0. The rates for all soils deduced in this way are compared with the rates given by cash rents :—

			<i>Produce estimate rates.</i>			<i>Cash rent rates.</i>			
			Rs. A. P.			Rs. A. P.			
Chahi	2	6	0	1	11	0
Abi	1	8	0	1	10	0
Sailab	2	6	0	3	7	0
Barani	1	5	0	2	14	0

Combining these sets of rates in the proportion in which batai and cash rents prevail the resultant is :—

					Rs. A. P.		
Chahi	...	...	...	...	2	3	0
Abi	...	...	...	...	1	9	0
Sailab	...	...	...	...	2	10	0
Barani	...	...	...	...	1	12	0

The high sailab and barani cash rents are explained by the fact that they are taken mainly in the villages of the northern half of the circle where the soil consists of a rich cool silt which is frequently renewed. These villages have few wells and comparatively little chahi or abi soil. Wells and abi irrigation are found mostly in the stiff rohi and kallar lands of the south where cultivation is expensive. At the same time the rates have to be applied throughout the whole circle and I recommend the following for adoption :—

			<i>Proposed rates.</i>			<i>Existing rates.</i>			
			Rs. A. P.			Rs. A. P.			
Chahi	2	4	0	2	2	0
Abi	1	10	0	2	2	0
Sailab	2	8	0	1	14	0
Barani	1	8	0	1	4	0

Applied to present areas they give an assessment of Rs. 1,12,909. The extra Rs. 91 can easily be obtained by raising the rate on chahi-abi and chahi-sailab. The new demand implies an enhancement of 30 per cent. on the present revenue and an incidence of Rs. 2-4-3. The northern portion of the Dokandi resembles the Aik circle of Daska where the incidence is Rs. 2-12-6. In the southern portion the villages near the stream produce splendid rice and wheat crops and I do not think the assessment too heavy.

61. In the case of the Darp practically only two soils need be considered—irrigated and unirrigated. The abi and sailab areas are trifling and consist chiefly of small patches in the path of drainage channels.

The Darp.

or in the immediate vicinity of a pond or of the Jajri and Bhed nalas. Most of the sailab area was described as abi until Settlement brought clearer ideas of classification and I would lump the two together for assessment purposes. A comparison of the bachh rates of last Settlement gives proportions of 1.5 to 1 between irrigated and unirrigated soils. Reduced cash rent rates give Rs. 3 for irrigated soils and Re. 1-15-0 for barani—nearly the same proportion. Rates deduced from the produce estimate in the manner described in the previous paragraph give :—

					Rs. A. P.
Chahi	...	...	...	...	3 6 0
Abi and sailab	...	...	...	...	3 0 0
Barani	...	...	...	...	1 0 0

Combining the batai and cash rent estimates in the proportions in which these rents are taken, we get :—

	Proposed.		Existing rates.
	Rs. A. P.		Rs. A. P.
Chahi 3 5 0	... Irrigated	... 2 8 0
Barani 1 12 0	... Unirrigated	... 1 14 0

to which may be added—

Abi and sailab	... 3 0 0
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I recommend the rates thus deduced. These rates applied to present areas give Rs. 300 short of the required assessment. This amount can easily be made up in distributing the total over villages. It will be observed that the barani rate is reduced by 2 annas in my proposals. This decision was arrived at in the manner already indicated but I may add that my experience of the Darp in the last two harvests convinces me that unirrigated soils should not be too highly assessed as compared with irrigated. The barani cane last autumn was miserable where it survived and in this spring the unirrigated wheat was scrappy and stunted though the season was exactly such as should form a good test of the moisture-retaining properties of Darp soil. On the other hand the irrigated wheat in Rabi 1913 was excellent.

The proposed assessment is actually, though not in appearance, heavier than that of the Shakargarh Darp, for the incidence per acre matured in the Raya circle comes to Rs. 2-7-5 whereas in the Shakargarh circle it is under Rs. 2-6-0. The enhancement amounts to 16 per cent. which is exactly the same as the rise in the produce estimate for the circle and about the same as the rise in cash rents.

62. In this circle there is only a comparatively trifling area of abi and sailab soils and there was not sufficient to go on in order to make a separate produce estimate for them. I expect that the abi or at any rate chahi-abi area will show a considerable increase when measurements are completed, because there really is a large area in the Kalar which receives irrigation from cuts taking out of bands or from the Jiwan Goraya Canal. The sailab irrigation is mostly of the same kind. In the distribution of the assessment between soils cash rents are merely misleading as they show barani land to be more valuable than chahi. This is because barani cash rents are taken on a specially good acre here and there in different villages and perhaps they should all have been rejected as abnormal. The small area of sailab land paying cash is of no importance and the rate abnormally high for the circle. But in 54 out of the 116 villages of the circle the irrigated and unirrigated rates adopted in the bachh can be compared and they give a proportion of a little over 1.5 to 1. The required assessment could be obtained by rates of Re. 1-15-0 irrigated

The Kalar.

including abi and sailab and Re. 1-4-0 barani, thus approximately preserving this proportion. The rates deduced from the produce estimate in the manner indicated in paragraph 60 are :—

				<i>Present rates.</i>	
				Rs. A. P.	Rs. A. P.
Chahi	...	...	...	2 0 0	1 13 0
Abi and sailab	...	...	...	1 7 0	
Barani	...	...	...	1 0 0	0 15 0

The produce estimate rates seem to me the fairer and I recommend them. They give an assessment of Rs. 77,000 approximately, which involves a rise of nearly 19 per cent. on an increase in cultivation of 2.2 per cent. I think that the Kalar was fully assessed at last Settlement. It is little if at all better than the Charkhri II of Daska. I personally do not think it as good, but I have only ventured to propose Re. 1-12-0 and Re. 1-0-0 as the chahi and barani rates of the latter circle. The incidence per acre matured is Re. 1-12-1 as against Re 1-11-4, the incidence deduced from the proposed assessment of the Charkhri II.

63. In the Khadir there are only 20 acres of abi and chahi-abi soil and rates need only be framed for chahi, sailab and barani. The sailab lands, given a moderate amount of rain, produce crops not much inferior to the chahi and the barani harvest is not so far behind the sailab. Cash rents are taken on too small an area to be a reliable guide in this circle. The rates adopted in the bachh of last Settlement give the following proportions :—

Chahi	...	...	...	...	1.73
Sailab	...	...	...	...	1.27
Barani	...	...	...	...	1

The corresponding rates would be Rs. 2-11-0, Rs. 2-0-0 and Re.1-9-0. By reducing the incidence per acre matured as given in the produce estimate in proportion to the reduction in demand we get Rs 2-3-0 per acre chahi and abi, Rs 2-3-0 for sailab and Rs. 1-9 0 for barani crops. On the average 100 acres of chahi land bear 122 acres of crops of which 87 are chahi and 35 barani : 100 acres of sailab land produce 82 acres of sailab crops and 100 acres of barani land produce 87 acres of barani crops. The theoretical assessment deduced in this way is chahi and abi Rs. 3-1-0, sailab Re. 1-13-0, barani Re. 1-6-0. These rates make no allowance for the cost of manuring the heavily-cropped chahi land or for the inferior outturn where they are not manured, and I think a combination of the results given by the two methods is fairest. Accordingly my proposals are as follows :—

Soil.				Proposed.	Existing rates.
				Rs. A. P.	Rs. A. P.
Chahi and Abi	...	...	...	2 14 0	2 1 0
Sailab	...	...	...	1 15 0	1 12 0
Barani	...	...	...	1 7 0	1 6 0

This gives an assessment of Rs. 80,000, involving a rise of 25.5 per cent. and an incidence of over Rs. 2-1-0 per acre matured on the average of 19 years. I regard it as a fairly full assessment.

64. It is possible that the south-western half of the Khadir circle will be adversely affected when the Raya Branch begins to flow, but as the canal will only carry water in the summer months the damage may not be serious.

Fluctuating assessments in the Khadir.

In case water-logging should become a real evil I would provide for the introduction of a fluctuating assessment with the sanction of the Financial Commissioners. The simplest method of determining fluctuating rates is to adopt the average incidence per acre matured as ascertained in the produce estimate, reducing it proportionately in order to get the sum required. The results of this process are :—

				Rs.	A.	P.
Chai and abi	2	8 0
Sailab...	2	3 0
Barani	1	9 0

These rates applied to the cropped area of the years 1905-06, 1906-07, 1909-10, 1910-11 and 1911-12, a period of nearly average rainfall, give an assessment of Rs. 80,599. It is, I believe, unusual to reduce the chahi rate in making it fluctuating but in the period mentioned 100 acres of chahi land raised 122 acres of crops and the fluctuating assessment will be levied on crops, not on soils. I propose the rates mentioned for adoption in case the assessment is made fluctuating.

65. As remarked in paragraph 55 of the Daska Report the present dialluvion rules cause dissatisfaction among the people and tend to restrict cultivation. The subject will be dealt with in a separate report.

66. Kharif irrigation from the Raya Branch will be extended to a portion of the waste in the Dokandi and Kalar circles. A certain amount of cultivated land must be included within the scheme because the canal will cut off its present supply and no compensation has been given. The commanded area will be divided into blocks and the area to be irrigated will be selected by the Extra Assistant Settlement Officer or myself. As in the Daska tahsil, I propose that the land revenue should be fluctuating within those blocks and that nahri crops should pay an average of Rs. 2 per acre. In the Dokandi the incidence per acre matured, reduced so as to bring out the assessment proposed, comes to Rs. 2-9-0 for chahi and abi lands; in the Kalar it is Rs. 2-2-0. As the portion of the Dokandi commanded by the canal is little better than that of the Kalar I would prescribe a fluctuating rate of Rs. 2-4-0 for chahi crops and Rs. 2-0-0 for abi and sailab everywhere. The higher rates proposed for a fixed assessment in the Dokandi would in any case have been greatly reduced in applying them to the villages in the tract to be irrigated. Only a small portion of these circles will be affected by canal irrigation and the area has not yet been defined, so that the results of applying the rates proposed cannot be reported. It is doubtful whether a new nahri circle should be made in view of the small area that will be actually irrigated from the canal. On the other hand the Dokandi villages in this tract are considerably less fertile than those of the rest of the circle and it might be well to group them separately. The question will be considered after irrigation has started.

CHAPTER VIII.—FINANCIAL RESULTS AND MISCELLANEOUS.

67. Cesses consist of the local rate and the lambardar's pachotra. The former has been raised this year by Rs. 2-1-8 and is now Rs. 10-6-8 per cent. of the land revenue: the latter is Rs. 5 per cent of the demand. Together they involve an addition of Rs. 15-6-8 per cent. to the assessment. In several villages a Chief Headman's cess of Re. 1 per cent is also raised. At Settlement there were in addition a Zaildar's cess and a Patwar cess and the total amounted to Rs. 21-10-8 of the revenue,