

*2nd order of soil.*—This order is cut up by fissures in the hot weather. When fissures are large, to be reduced to 3rd class, unless soil is black and second crop grown when it should be kept as 2nd.

Both these faults were denominated by one sign, *viz.*, √ or that used for *walsar*.

### *Water.*

(class. Anna value.

Description.

- |   |       |  |
|---|-------|--|
| 1 | 10 .. | When the water-supply is from surface springs, or received by <i>pdt</i> from a <i>nala</i> , or from there being moisture in the soil, owing to which <i>jirvel</i> , <i>ambe mohor</i> , or some other superior kind of rice is grown, which is cut in November and a good yield annually is a certainty. Sugarcane can also be grown. |
| 2 | 8 ..  | (a) As above, but the moisture is so great as to injure the crop.<br><br>(b) When the description of rice grown is the same as that stated above, but in seasons of bad rainfall the yield is not good.  |
| 3 | 6 ..  | When the rice grown is not of a superior kind but middling, such as <i>halva</i> , <i>ambe mohor</i> , etc., which is cut during December and November and when, even though the rainfall be scanty, the yield is good.  |
| 4 | 4 ..  | When the ordinary class of rice grown is of a coarser kind which is cut in October, though the yield is good even in years of scanty rainfall.   |
| 5 | 2 ..  | Rice grown same as class 4, but the crop uncertain owing to lack of moisture.  |
| 6 | .. .. | Land elevated and wholly dependent upon the rainfall to grow <i>take kudai</i> or other inferior kinds of rice.  |

(*Vide* Example No. 7.)

### (3) *The Dharwar system.*

#### (i) *In the Southern Maratha Country.*

The origin of this system has been explained in Part I (*vide* p. 110). Two factors of value were taken into account, *viz.*, Soil and Water.

(a) *Soil*.—This was classed according to the ordinary soil scale of 16 annas (*vide* p. 300).

(b) *Water*.—As in the case of Pátasthal, the different degrees of water-supply were divided into 6 classes as under :—

Class.

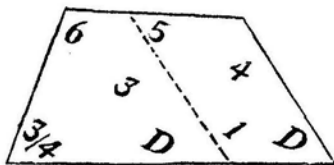
Description.

- 1 .. A perennial supply from a tank or stream, admitting of the better kinds of sugarcane being grown every second or third year.
- 2 .. Supply from the same source as above, but not so good, admitting a second rate crop of sugarcane.
- 3 .. (a) Supply of water the same sources as in 1st and 2nd classes, but from land being situated high, or from water failing at the end of December or January, sugarcane can only be grown when the rains are very favourable.  
(b) When water is not derived from a tank or stream but in consequence of the land being in a low situation sugarcane can be grown when the rains are favourable.
- 4 .. When there is not a supply of water, or advantages of situation, admitting of sugarcane being grown, but the supply of moisture is sufficient to admit of a rice and after-grain crop being grown in one season ; or, if an after-grain crop cannot, from some defect in the soil, be grown, yet the moisture suffices to produce an excellent rice crop.
- 5 .. Supply same as in preceding class, but no after-crop can be raised, and in consequence of the water-supply being drawn from a small tank or from channels led from higher ground, pretty frequent rainfall is required to give one middling rice crop.
- 6 .. Water-supply derived from pure rainfall.

Intermediate or half classes occur from striking the average of water classification in the several " shares " or portions of a field separately classed, in order to obtain the water classification average for the whole field or the whole rice land in a field.

EXAMPLE NO. 8.

*Old Rice (Dharwar system).*



Class.	Soil.	
	Shares.	Annas.
5	1	8
6	1	6
Total ..	2	14

*Average bhag annas .. 7-0.*

*Water class.*

3	1	3
4	1	4
Total ..	2	7

*Average water class .. 3-6.*

With reference to these water classes Colonel Anderson remarks: "The two highest classes, and even the 3rd class also, contemplate something better than what might be called mere rice land. In fact, the greater part of the sugarcane grown in the Dharwar Collectorate is grown in what is ordinarily called rice land, being cultivated with rice followed by an after-crop two years out of three, and in the third year with sugarcane. It is not till we come to the 4th and 5th classes of water that pure rice land in the ordinary acceptation of the term is met with." \*

It will be seen that, in the Example (No. 8), the average water class has been worked out for the whole field in the same way as if the figures of the water-class were annas; and in fact for this purpose they were treated as such and the average taken to the nearest 6 pies according to the following *dharsod* scale:—

*Water class (Dharsod Scale).*

From	To	Annas to be confirmed.
as. p.	as. p.	as. p.
1 0	1 2	1 0
1 3	1 8	1 6
1 9	2 2	2 0
2 3	2 8	2 6
2 9	3 2	3 0
3 3	3 8	3 6
3 9	4 2	4 0
4 3	4 8	4 6
4 9	5 2	5 0
5 3	5 8	5 6
5 9	6 0	6 0

*(ii) In the Deccan.*

The Dharwar system was introduced into the Deccan Survey by Colonel Anderson about the year 1877, after which it was universally employed for the classification of rice lands. The only change made was that in 1886 the following revised scale for soil was introduced as

\*Paragraph 64 of Colonel Anderson's Report No. 7 of 4th January 1876 on the Old Bankapur Taluka, page 24 of Selection No. CLV, New Series.



it was found that a depth of  $1\frac{1}{4}$  *haths* was quite sufficient for growing the best kinds of rice :—

Class.	Bhag anna.	Description of soil.		
		A mixture of red and black or black and yellow.	A mixture of red and yellow.	Red, but mixed with gravel.
		Depth in haths.		
1	16	$1\frac{1}{4}$	....	....
2	14	1	....	....
3	12	$\frac{3}{4}$	....	....
4	10	$\frac{1}{2}$	....	....
5	8	$\frac{1}{4}$	....	....

The scale of water classes used was the same, but, owing to the fact that rice lands in the Deccan are dependent for their water-supply upon the rainfall entirely, and do not produce sugarcane like those of the Southern Maratha Country, land coming under the first three water classes was never found and these classes were, therefore, not used in practice, so that the scale practically began at the 4th water class.

#### (4) *The Satara system.*

(a) *Soil.*—Previous to the year 1872 the ordinary soil scale with a maximum depth of  $1\frac{3}{4}$  *haths* was employed. After that year, however, the revised scale of  $1\frac{1}{4}$  *haths* was introduced.

(b) *Water.*—The system of water classes used in the Satara Survey was that of the Kolhapur Hill Rules. According to this system there were four water classes as follows :—

Class.	Sub-class.	Source of supply.	Crops grown.
1	..	A <i>pdt</i>	.. Sugarcane, or <i>duphasal</i> crops, i. e., a first crop of transplanted rice with an after-crop of <i>khapli</i> .
2	..	Do.	.. A first crop of transplanted rice, followed by an after-crop of wheat, gram or peas.

Class	Sub class.	Source of supply	Crops grown
3	1	<i>A pāt</i>	. One crop of transplanted rice.
..	2	Do.	.. A first crop of drilled rice, followed by an after-crop of wheat, gram or peas.
4		Do.	.. One crop of drilled rice.

A reduction of a whole or half class was made if, on account of the land being elevated, there was not always a certainty of the crop being a good one

(B) NEW RICE.

(a) *The Deccan*

The classification system applied to New Rice lands differed to a certain extent in every district of the Deccan.

*Poona, Ahmadnagar and Sholapur.*

(1) In those talukas or parts of talukas where the *Deshi* system of Rice classification had been adopted at the Original Survey, New Rice land was classed and assessed exactly as Old Rice at Revision.

(2) Where the Dharwar system had been employed New Rice was classed and assessed in two different ways :—

(a) *In parts of Junnar and Purandhar.*—In these talukas the “Bankapur” system of Colonel Anderson was applied, by which New Rice was classed as Old Rice on the principles already explained in Part I (*vide* p. 178).

(b) In Khed, Haveli, Maval and the rest of Purandhar of Poona and in Sholapur and Ahmadnagar generally a different system was introduced. Under this system the whole area of the Rice land in each field was measured and classed together according to the rules of the Dharwar system (*vide* p. 332). The area of New Rice was then found by deducting the area of the Old Rice from the total. This New Rice area was then assessed as follows :—

The water class was first turned into annas according to the following scale:—

*Scale for deducing Water Class Annas.*

Classification bhg annas				Water Class.											
				1-0		2-0		2-6		3-0		3-6		4-0	
1				2		3		4		5		6		7	
as	p.		as.	as.	p.	as.	p.	as	p	as.	p.	as.	p.	as.	p.
16	0	to	15	9	0	6	6	5	0	3	6	2	6	2	0
14	11	„	14	8	6	6	0	5	0	3	6	2	6	2	0
13	11	„	13	8	0	6	0	4	6	3	0	2	6	2	0
12	11	„	12	7	6	5	6	4	0	3	0	2	6	2	0
11	11	„	11	7	0	5	0	4	0	2	6	1	6	1	6
10	11	„	10	6	0	4	6	3	6	2	0	1	6	1	6
9	11	„	9	5	0	4	0	3	0	2	0	1	6	1	0
8	11	„	8	4	6	3	0	2	6	2	0	1	6	1	0
7	11	„	7	4	0	3	0	2	6	2	0	1	6	1	0
6	11	„	6	3	6	2	6	2	0	1	6	1	6	1	0
5	11	„	5	3	0	2	0	2	0	1	6	1	0	0	6
4	11	„	4	2	0	1	6	1	6	1	0	1	0	0	6

The resultant annas were added to the Soil annas and the assessment was then worked out by the application of the Dry-crop rate by means of a special *jantri*.

By this system, therefore, New Rice land was treated as a superior Dry-crop with the addition of annas to the Soil annas in consideration of the "advantage" just as was done, as will be seen subsequently, in Gujarat.

*Satara.*

In Satara Old and New Rice in the same field were classed together, the area of New Rice found by deduction and then assessed by means of a special *jantri*.

*Nasik.*

In practically the whole of the Nasik district New Rice land was left untouched at Revision and remained unassessed, but in some parts

of the Nasik and Dindori talukas a peculiar system of classification is found by which New Rice lands seem to have been divided into 8 classes in accordance with the depth of soil only—at any rate there is no trace of water classification—and an acre rate was then assigned to each of these 8 classes in accordance with two special *jantris*. The rules under which the classifications were done are not discoverable, but the area covered is small and the question is not of much importance.

(b) *The Southern Maratha Country.*

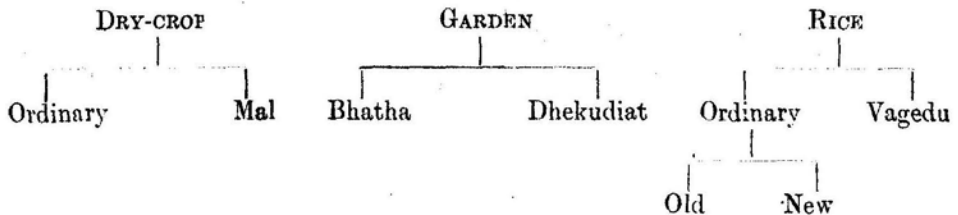
In the districts of Belgaum, Dharwar and Bijapur the Bankapur system (*vide* under “Poona”) was employed.

## CHAPTER IV.

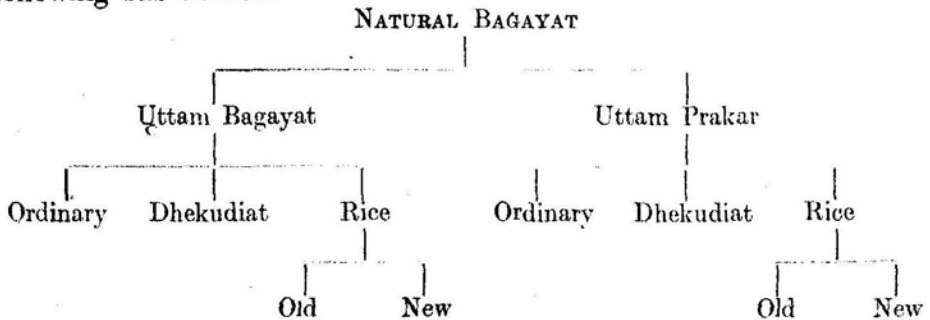
### THE GUJARAT SYSTEM OF CLASSIFICATION.

The classes of land.

THE ordinary Land Classes of the Gujarat Survey  
are the following :—



In addition, however, to these there is a separate class of land in the Surat district called "Natural Bagayat" which is divided into the following sub-classes :—



#### DRY-CROP.

##### (1) Ordinary.

The factors of value taken into account in the classification of the ordinary Dry-crop lands of Gujarat are two in number, viz., Soil and Sub-soil water-supply.

##### (a) The Soil factor.

In his *Land Revenue of Bombay* Mr. Rogers has the following remarks regarding the history of the Gujarat Soil Classification which are worthy of transcription :—

The Soils of Gujarat.

“ The soil of Gujarat being very unlike that of the Deccan and Southern Maratha Country, where the classers had been accustomed to work, it was found necessary to arrange a new system of classification. It may be said roughly that all the soil of the province is of alluvial or diluvial origin, there being rarely any rock from the wearing down of which soil could be formed. Its two main divisions are the black (*kali*) and the light coloured (*goradu* or *gorat*), the former having probably been formed in the estuaries of the great rivers running into the Gulf of Cambay—the Tapti, the Narbada, the Mahi and the Sabarmati and the smaller streams—and the latter further inland and away from those estuaries; the former is diluvial, the latter alluvial. In the estimation of the people the light soil was, as a rule, the more valuable; and it is an undoubted fact that the parts of the country where it prevails shew more outward signs of prosperity than the black soil regions. On looking closely into the matter, however, it was evident that this was to be attributed more chiefly to the greater industry and agricultural skill of the people than to the intrinsic superiority of the light soil to that of the black. The latter was clearly by nature the more fertile of the two, and required less labour and manure, although the former, when better tilled and manured, produced the more valuable crops. In the new classification scale accordingly black was reckoned the best or 16 annas soil, while *goradu* was put down as 12 or 14. A scale of faults, according to which the value of the soil deteriorated, was arranged, on the same principles as in the original method pursued elsewhere, but differing materially from those. Want of depth for instance, which counted for much in a rocky country like the Deccan, was practically never found in Gujarat; while in the latter an excess of sand tending to loosen the particles of soil too much, and impregnations with salt, were elements affecting the value of the soil unknown in the former country.”

With the addition of a third order of inferior Soil called *maradi* or *goramti* the general Soil Classification scale, therefore, was as follows :—

The Soil Scale.

*Soil Scale.*

Class	Bhag annas	Soils of the		
		1st Order.	2nd Order	3rd Order.
		Black soil or besar	Goradu or sandy loam	Goramti or yellowish inferior soil
1	2	3	4	5
		Depth.	Depth.	Depth.
1	16	1 $\frac{3}{4}$ cubits.	..	..
2	14	1 $\frac{1}{2}$ "	1 $\frac{3}{4}$ cubits.	....
3	12	1 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	...
4	10	1 cubit.	1 $\frac{1}{4}$ "	...
5	8	$\frac{3}{4}$ "	1 cubit	....
6	6	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1 cubit.
7	4 $\frac{1}{2}$	$\frac{1}{4}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "
8	3	..	$\frac{1}{4}$ "	$\frac{1}{2}$ "
9	2	...	..	$\frac{1}{4}$ "

Note —By "Besar" in column 3 is meant a soil which is a mixture of *kali* and *goradu*

*Faults.*

The "faults" recognized as deteriorating from the quality of the soil were the following:—

(Fault. & Conventional mark

Chunkhad	.
Gochu	7
Utarvat	/
Valsar	✓
Resvat	×
Dhupan	~~~~~
Upalvat	□
Karal	^
Khar	T

For explanation, *vide* Deccan system (p. 301).

= salt efflorescence or impregnation with salt.

In the Gujarat Survey Scale increases to Soil annas were made in the Ahmadabad district only, and there not in the Prantij taluka. The increases made in the other talukas of that district were as follows:—

Taluka.	Soil annas.	Scale increase.
Daskroi .. ..	{ 16 to 14-1 14 to 13-0 12-11 to 10	Nil 1-0 0-6

Taluka.	Soil annas.	Scale increase.
Remaining talukas ..	16 to 14-1	<i>Nil</i>
	14 to 12	1-6
	11-11 to 10	1-0
	9-11 to 8	0-6

These increases were made in the case of *gorat* (*i. e.*, 2nd order) soil only and not in that of black soil or *goramti*.

As, however, was the case in the Deccan, so in Gujarat soil scales slightly differing from the standard were employed in different districts and talukas even of the same district to meet varying needs. Thus, to give an example, in the case of the Kaira district, where, especially in the part known as the Charotar, the *goradu* is exceptionally rich and fertile, the following more detailed scale was employed in all talukas except Matar:—

*Kaira Scale.*

Class.	Bhag annas.	Soils of the	
		1st Order.	2nd Order.
		Black or besar.	Goradu.
1	2	3	4
		Depth.	Depth.
1	15	}	}
1½	15½		
2	15	}	}
2½	13½		
3	12	}	}
3½	10		
4	8	}	}
4½	7½		
5	7	}	}
5½	6		
6	5	}	}
6½	4½		
7	4	}	}
7½	3½		
8	3	}	}
8½	2½		
9	2		



*(b) Sub-soil water factor.*

The history of the Sub-soil water assessment in Gujarat has been given in Part I, p. 166. It was there explained that, in accordance with the policy of Government of assessing, in the case of lands irrigable by the construction of wells, not the use but the capability of being used, the special taxation of existing wells was abandoned at the Revision Survey and as a substitute was adopted the system of making a slight addition to the soil annas of all lands proved to possess a sub-soil water-supply that could be made available for the purposes of irrigation by the construction of a well.

These additions were made, by the method described below, in accordance with the following scale :—

*Sub-soil Water Scale.*

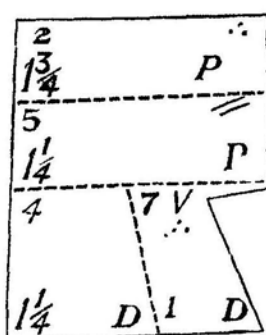
Soil Annas	Order 1.			Order 2.			Order 3.			Order 4.		
	Sweet throughout the year.			Slightly brackish but drinkable.			Brackish, undrinkable			Brackish and undrinkable and becoming salt.		
	A	B	C	A	B	C	A	B	C	A	B	C
	10 ft and less.	Over 10 ft. to 20 ft.	Over 20 ft. and under 40 ft.	10 ft. and less.	Over 10 ft. to 20 ft.	Over 20 ft. and under 40 ft.	10 ft and less.	Over 10 ft. to 20 ft.	Over 20 ft and under 40 ft.	10 ft and less	Over 10 ft. to 20 ft	Over 20 ft. and under 40 ft.
1	2	3	4	5	6	7	8	9	10	11	12	13
20 annas and over.	6	5	4	5	4	3	4	3	2	1	6	
16 to 19 11	5	4	3	4	3	2	3	2	1 6	1	6	..
12 to 15-11	4	3	2	3 6	2 6	1-6	2	1 6	1	1	6	.
8 to 11-11	3-6	2	1-6	2 6	1-6	1	1-6	1	6	1	6	.
5 to 7-11	2-6	1-6	1	1-6	1	6	1	6	..	.		

*Notes.—*

- (1) The depths in columns 2-13 were reckoned from the ground to the surface of the water.

# EXAMPLE No. 9.

*Dry-crop (with scale increase and sub-soil water).*



Class	Squares.	Annas.
2	1	14
4	1	10
5	1	8
7	1	4-6

Total ..	4	36-6
----------	---	------

Average bhag annas	..	9-0
Add—scale increase	..	1-0

Total ..	10-0
----------	------

*Kayam bhag annas—*

Soil	..	10-0
Sub-soil water (3rd class)	..	0-6

## EXPLANATION.

*The water in the well of the neighbouring survey number is brackish and undrinkable and at a depth of over 20 feet.*

(ii) Order 4 was not applied in the case of Dry crop lands, but to Rice lands only.

(iii) In case of—

(a) a rocky *substratum* or other obstacle to well construction,

(b) a deficiency in the water-supply,

the scale addition was diminished by half.

The method of applying the scale in actual practice was as follows. At the time of classifying the village lands the classer noted the depths of the water in all the actually existing wells, together with other evidence of the condition of the sub-soil supply. Then, by noting the relative positions of wells and the general lie of the land, he was able to lay down on the map areas within which the evidence shewed that the sub-soil water-supply might reasonably be expected to be homogeneous, in respect both of the depth at which it might be tapped and also of the quality of the water. Thus, in one part of the village it might be sweet and obtainable at depths below 10 feet; in a neighbouring tract, slightly brackish and only at a depth of over 20 feet; yet again, there might be an area without wells at all and evidence that well-digging would be unprofitable. In the office the classer would make additions to the Soil annas of the survey numbers within the first two areas according to the scale: in the case of the first area from the figures given in column 2, and in the case of the second from column 7. The survey numbers in the third area would, of course, have no addition made at all. (*Vide* Example No. 9 on the opposite page.)

## (2) *Mal*.

In the Kaira district—particularly in the talukas of Thasra, Kapadvanj and North-East Nadiad—there are large areas of almost uncultivable land called *Mal*. These “*Mal*” areas are so-called, not from being composed of any particular kind of soil, since they comprise both *kali*, *besar* and *goradu*, but from possessing, at depths of from 18 inches to 5 feet, a cretaceous *substratum* of limestone which is impervious to water. The result is that, as the soil is without drainage, the first rains convert it into a quagmire of impassable mud; and when this has evaporated, as there is no sub-soil water-supply, it at once becomes hard and unploughable.

At the Revision Survey of the Kapadvanj taluka the Deputy Superintendent contended that the original classification of these lands had

been wrongly done and urged that they ought to be re-classed according to a new scale. After a long technical discussion (for which *vide* the Kapadvanj Revision Settlement Report) it was finally decided that re-classification was both impossible and unnecessary : impossible, because it was proved to be impracticable to distinguish Mal from ordinary soil by the processes of inspection and digging ; and unnecessary, because the relative inferiority of the Mal tracts was shewn to have been fully recognized at the Original Settlement and to have been allowed for by keeping both the classification and the maximum rates low. It was, therefore, decided to let the original classification stand and to afford the necessary relief : —

- (a) by not assessing these lands to sub-soil water advantage ; and
- (b) by adopting a continually decreasing distance from village scale in Mal villages.

The significance of (b) will be explained in the chapter upon the “Distance from Village scale.” For the purposes of the present chapter it is only necessary to point to the fact that in the classification of these lands —

- (i) the Soil element was classed according to the ordinary Soil scale, but at a low rate, *i. e.*, by making large allowances for faults, etc. ;

- (ii) the classification of the sub-soil water element was omitted altogether.

#### *Pôt-kharab.*

In the Gujarat, unlike the Deccan Survey, Pôt-kharab were measured and not estimated. The measurements were only made roughly by taking out the lengths and breadths.

For reasons explained in Part I, p. 187, however, Government in 1884 decided that, to obviate the danger of assessing improvements in the case of talukas the Original Settlements of which had been made after 1854, the area of Pôt-kharab fixed at the Original Settlements should be confirmed at Revision ; and, as all Gujarat Original Settlements are subsequent to that date, the area of Pôt-kharab is that measured at the Original Survey.

## GARDEN.

(1) *Bhatha*.

By "Bhatha" is meant the rich class of Garden land which is composed of the silt deposits left by the overflow of rivers and streams. This class of soil is itself of extraordinary fertility, and, situated as it is, it usually has also the great advantage of a sub-soil water-supply of sweet water obtainable at very short depths, often indeed by merely digging holes in the surface.

In the Gujarat Survey such lands were divided into three classes in accordance with varying degrees of permanency:—

Class	Description
1 ..	Land lying above high flood level, or lying sufficiently high to make it permanent and definable by permanent boundary marks.
2 ..	Land so situated that, though it could not be defined by permanent marks yet was sufficiently permanent at the time of classification on account of its being occupied or from other causes to enable it to be classed according to its existing value.

The classification of these two classes was conducted as follows:—

*Soil*.—This element was classed in accordance with the ordinary Dry-crop soil scale; but, as the 16-anna limit was not wide enough to cover the whole range of values, the maximum was increased to 20 annas, by the addition of 2 classes of 2 annas each (called *gūns* or 'advantages') which were added to the ordinary classification in the case of the higher qualities of Bhatha. Thus, if the depth of the soil to the *substratum* was  $1\frac{1}{2}$  cubits, but the soil was richer than ordinary, one *gūn* = 2 annas or two *gūns* = 4 annas would be added to the classification according to the soil scale of 12 annas, making it 14 or 16 annas respectively.

*Water*.—The scale employed was the ordinary Sub-soil water scale already given (*vide* p. 342). But, in order that the

importance of the water advantage might have full weight, the scale annas were doubled. Thus, the water scale annas for sweet water obtainable between 10 and 20 feet for Dry-crop soil of between 20 and 16 annas in value are 4. In the case of Bhatha land of the same quality, however, they would be 8; and so on. (*Vide Example No. 10.*)

The difference between the two classes is to be found, not in the classification, but in that, while land of class 1 was divided into survey numbers in the ordinary way and defined by permanent boundary marks, that of the 2nd class was not so defined but the area in occupation was measured up every year and assessment charged accordingly.

Class.

Description.

- 3 ...Land the soil of which is liable to be swept by floods or which is deposited fresh every year.

This class was called *Binakari* (unassessed) and was not classed at all, but sold annually by auction.

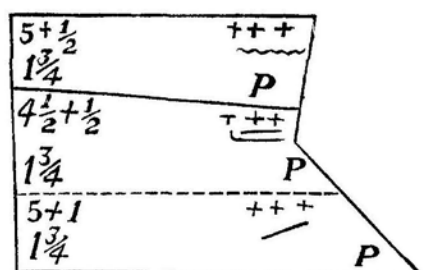
### (2) *Dhekudiat*.

“*Dhekudiat*” is land watered or capable of being watered by means of a *dhekudi* or water-lift, either direct from the bed of a river or stream, or from a pit to which the water has been led from the stream by means of a channel. The history of *Dhekudiat* assessment has been given in Part I, pp. 103 and 170. It was there shewn that, owing to the difficulty experienced in devising any satisfactory method of assessing such lands in North Gujarat on account of the constant changes in the course of its streams, the special *Dhekudiat* assessment was abandoned in that district and lands irrigable by *dhekudis* treated as ordinary Dry-crop and assessed only to Soil and Sub-soil water advantages. These disadvantages were, however, shewn not to exist in the case of the Surat district, as the course of its rivers and streams is of a permanent character and not liable to variation. In this district, therefore, it was found possible to distinguish a separate class of *Dhekudiat* lands and to arrange a special system of classification.

For this purpose *Dhekudiat* land is defined as “all land irrigated or irrigable from a *dhekudi*, *pakka* (permanent) or *kacha* (temporary), on the bank of a stream which is not liable to change of course.” In

# EXAMPLE NO. 10.

*Bhatha.*



Class	Shares.	Annas.
$4\frac{1}{2} + \frac{1}{2}$	1	10
$5 + 1$	1	10
$5 + \frac{1}{2}$	1	9
Total ..	3	29

Average bhag annas	..	9-8
Kayam bhag annas	..	9-6
Sub-soil water annas	..	4-0

Depth to water 14 feet.

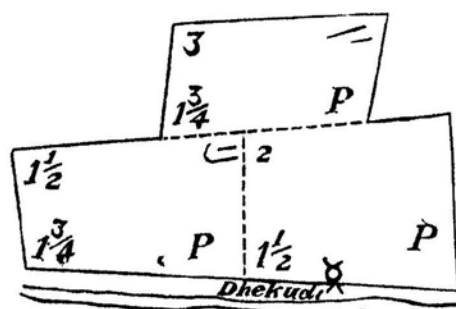
## EXPLANATION.

The figures  $+\frac{1}{2}$  and  $+1$  mean that  $\frac{1}{2}$  gún = 1 anna or 1 gún = 2 annas are to be added to the ordinary soil classification annas.

The sub-soil annas in the case of ordinary Dry-crop for water at 14 feet on a Soil classification of 9 annas 6 pies would be 2 annas, but they are doubled for Bhatha land.

EXAMPLE No. 11.

*Dhekudiat.*



Class	Shares	Annas
$1\frac{1}{2}$	1	15
2	1	14
3	1	12
Total ..	3	41

Average bhag annas .. 13-8  
 Kayam Soil annas .. 13-6  
 Dhekudiat annas .. 6-0

*Irrigable area within 15 chains. Depth to water 12 feet.*



the case of lands not actually irrigated, the decision as to whether they were "irrigable" depended upon such considerations as the presence of *dhekudis* in neighbouring fields, the situation and general lie of the land, the condition of the bank as facilitating or hindering the construction of a *dhekudi*, and so on. Generally speaking, land situated more than 30 chains from the bank was not taken to be Dhekudiat owing to the difficulty of training the water to such a distance.

Land decided to be Dhekudiat was classed for Soil and Water elements as follows:—

*Soil*.—This was classed in accordance with the ordinary Dry-crop scale.

*Water*.—The main considerations in determining the relative grades of this factor were, firstly the depth from the bank to water level, and secondly the distance of the land irrigable from the site of the *dhekudi*. The scale framed on these principles was as follows:—

*Dhekudiat Water Scale.*

Soil annas	Distance of land from site of <i>dhekudi</i>	Depth of water in the <i>dhekudi</i> or to water level in the stream on 1st February		
		Under 10 feet	10 feet to under 25 feet.	25 feet to under 35 feet.
		Annas	Annas	Annas
16 annas or over	Under 10 chains	16	12	8
	From 10 to under 20 chains	12	8	6
	From 20 chains or over	6	4	2
10 annas to under 16	Under 10 chains	12	9	6
	From 10 to under 20 chains	9	6	4-6
	From 20 chains and over	4-6	3	1-6
5 annas to under 10	Under 10 chains	9	6-6	4-6
	From 10 to under 20 chains	6-6	4-6	3
	From 20 chains and over	3	2	2

• (Vide Example No. 11 on the opposite page.)

## RICE.

The Rice lands of Gujarat are in general simply Dry-crop fields which, owing to their being situated on a lower level than the fields surrounding them, are enabled to catch and retain the moisture draining from the higher grounds. Generally speaking, the rainfall and drainage form their only sources of water-supply, in which case the Rice grown is known as "Akasia" Rice. These somewhat precarious sources of supply are occasionally supplemented, as in the case of Dry-crop lands growing Garden crops, by irrigation from wells, which is used to save the crop during unduly prolonged breaks in the monsoon. In addition, however, to the rainfall and well irrigation there is, in a large number of cases, a third source, *i. e.*, from the numerous "tanks" which are scattered over the face of the country. These "tanks" vary in size from a small depression in the ground (*talavdi*), serving perhaps part of a small field with the water laid on by means of hand-scoops, up to the large Government reservoir (*talav*) with a scientifically arranged system of outlets and channels. The use of one and all, however, is the same—to supplement the rainfall in case of emergency. A supply of this kind is known by the technical term of "Himayat." This Himayat is of two kinds: *viz.*, first Kharif Himayat when the supply is used only for the purpose of cultivating the Rice crop, and Rabi Himayat when it is used for growing a second crop of *val*, *divela*, etc., after the rice crop. Very occasionally a supply of water is derived from rivers or streams in which case it is called "River Himayat." Sometimes, however, in the case of Rice lands possessing an exceptional amount of natural moisture it is possible to grow a second crop without tank or other irrigation. Such lands are called "Bheja Rice Lands," and this advantage was taken into account in the ordinary way by an addition to their soil value of 1 anna under the term "Dusota" (second crop). In the case of ordinary Rice lands, therefore, there are five factors of value taken into account in classification; *viz.*, Soil, Sub-soil water, Akasia, Himayat and Dusota.

The second class of Rice land—Vagedu Rice—is really only a variety of Ordinary Rice and is peculiar to the Kaira district. In such lands Rice is sown broadcast as a mixed crop with *kodra*, *tuver*, etc. The factors of value taken into account are Soil, Akasia and Himayat.

The third class is that of Natural Bagayat Rice which is described under the head of "Natural Bagayat" (*vide* p. 356).

*A.—Old Rice.**(1) Ordinary Rice.*

(a) *Soil.*—In speaking of the system of soil classification for Rice lands in 1894 the Deputy Superintendent, Gujarat Survey, remarks : “ Rice being an aquatic plant is less particular as to the soil in which it grows than any *kharif* or *rabi* crop. The deteriorating ingredients, which are recognized as faults in the classification of soils, have, therefore, considerably smaller allowance made for them in Rice than in Jirayat land classification, the main point to be looked to being the power of retention of water by the soil,” to which he might have added that the question of depth is also of considerably less importance than in the case of Jirayat classification. In fact, a depth of 1 *hath*, as against 1½ *haths* in the Deccan, was found sufficient for the production of 1st class Rice and it is upon this as a maximum that the Gujarat soil scale is founded. As for the question of faults referred to by the Deputy Superintendent, so little importance was attached to their deteriorating influence that only half a class reduction was allowed from the soil classification based upon depth, however many faults might actually be present. This general reduction was marked in the classification sketch by the conventional sign “  $\Delta$  ” (*triconda*), the particular fault or faults present being left unspecified.

Before, however, giving the actual scale, reference must be made to what, it must be admitted, seems undoubtedly a “ peculiar practice ” of the Gujarat system of Rice soil classification. As will be seen from inspection of the scale it is based upon a *nominal* maximum of 8 annas classification for 1st class Rice soil of 1 *hath* in depth without faults. As a matter of fact, however, the *actual* maximum is 16 annas for 1st class soil and the rest in proportion, for, before applying the nominal scale annas to the maximum rate, they were doubled. The reason given for this practice is “ the acknowledged absence of need of too great differentiation in soil valuation in Rice land.” But it is obvious that the “ lack of differentiation ” in the scale given is entirely nominal, since the doubling of the annas has exactly the same effect as if the scale had been framed *ab initio* upon a 16-anna basis. However this may be, it has to be recollected that the annas of the scale given below have to be doubled in order to discover their actual value.

*Rice Soil Scale.*

Class	Value in annas.	Soils of the		
		1st Order	2nd Order	3rd Order.
		Black or Peas	Goradu	Yellow or Whitish soil.
1	2	3	4	5
		Depth in haths	Depth in haths	Depth in haths.
1	8	1	..	..
Δ	7	..	..	..
2	6	3 4	1	..
Δ	5	..	..	..
3	4	1 2	3 4	1
Δ	3	..	..	..
4	2	1 4	1 2	3 4
Δ	1	..	..	..

(b) *Sub-soil Water*.—The scale used was the same as that for Dry-crop lands and was applied under the same rules (*vide* p. 342).

(c) *Akasia*.—Four classes of Akasia were recognized, on account of which an addition was made to the Soil annas as shewn:—

Class.	Annas.	Description
1	8 ..	Fields well embanked and the situation of which is such that the drainage from the higher ground is good, enabling the finest kinds of rice to be grown annually.
2	6 ..	Fields well embanked, but having not such a good drainage from higher ground, yet will grow <i>sutarsal</i> rice without fail, and occasionally in good years the finer kinds of rice.
3	4 ..	Fields getting some drainage from higher ground and, by means of good embankments, are fairly

Class. Annas.

Description.

certain of being able to grow rice of an inferior variety annually.

- 4      2    .. High-lying fields which have no drainage and which receive only the rain which actually falls on the surface, so that rice is only grown in good years.

(d) *Himayat*.

(I) *From tanks*.

(i) *For kharif crops*.—Four classes of *Himayat* were arranged as follows :—

Class. Annas.

Description.

- 1      8    .. Full assistance annually available by flow so long as water is required for the best kinds of rice.
- 2      7    .. As above, but irrigation partly by flow and partly by water-lift.
- 3      6    .. Supply of water more precarious, but lasting till about the 1st October and the finer qualities of rice cultivable.
- 4      4    .. Water does not last till the beginning of October and the quality of rice usually grown is inferior.

Where it was found necessary to use lifts to raise the water to the required level a reduction of 2 annas per lift was made. Thus, in the case of the 4th class, if two lifts were used, the *Himayat* would be *nil*.

(ii) *For rabi crops*.—Four classes were arranged in this case also :—

Class. Annas.

Description.

- 1      8    .. A certain and full supply by flow throughout the year.
- 2      6    .. Supply certain only till about the 15th of March.
- 3      4    .. Supply certain only till about the 15th of February.
- 4      2    .. Supply ceasing before that date.

Where the use of lifts was necessary a reduction was made of 2 annas per lift.

(2) *From rivers.*

River Himayat was classed at 8 annas with a reduction of 2 annas per lift.

(e) *Dusota*.—Where a second crop of *val*, *divela*, etc., was grown without tank or any other irrigation, an addition of two classes—called “*güns*”—of 2 annas each was made if the second crop was taken annually. If grown less frequently, then the addition was one or half a “*gün*,” i. e., 2 or 1 anna. If the soil was saltish, then the addition otherwise allowable was halved.

This addition was only made in tracts of heavy rainfall, damp climate and retentive soil. Further, it was not applied at all where tank Himayat was assessed for *rabi* crops as under (ii) above.

(*Vide* Example No. 12 on the opposite page.)

*B.—New Rice.*

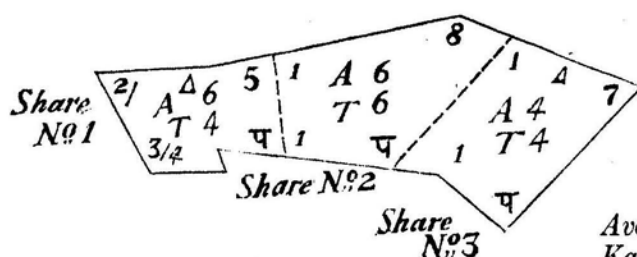
In the Gujarat Survey New Rice lands were treated as Dry-crop lands possessing an “advantage” over the ordinary land of that class in the facility for conversion into Rice. They were, therefore, classed exactly as Dry-crop with regard to the Soil and Sub-soil Water factors but with an addition thereto in the form of a “Position class” in which the advantage referred to above was taken into account. Where, however, New Rice was irrigable from a tank or river, the Himayat rules of Old Rice were applied while the factor of “Dusota” was also classed in the same way. The factors of value taken into account in the classification of New Rice, therefore, were Soil, Sub-soil Water, Position, Himayat and Dusota.

Soil,  
Sub-soil Water, } as for Dry-crop.

*Position Class*.—Three classes of “Position class” were arranged, viz.—

Class.	Annas.	Description.
1	4	Where the land lay below the level of the existing rice land, or of the Dry-crop land in the vicinity, and nothing had to be done but to build the embankments in order to catch the rain or other water.

EXAMPLE NO. 12.  
Old Rice (ordinary.)



Class.	Shares.	Soil.	Annas Water.
1	1	8	12
1	1	7	8
2	1	5	10
Total ..		3	20
			30

Average bhag annas .. 6-8 10

Kayam bhag annas—

Soil .. 6-6

Water .. 10 { Akasia .. 5-6  
Himayat .. 4-6

Sub-soil water (1st class) .. 2-0

Water in the well of the neighbouring number sweet and obtainable at 20 feet.

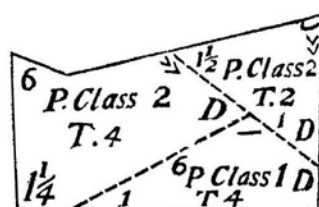
EXPLANATION.

(i) The figure 2 followed by  $\Delta$  in the 1st share denotes the 2nd class of soil with faults which reduce the Soil classification to 5, as is shown by the figure in the right hand corner of the share, and so on in shares Nos. 2 and 3. It must be remembered that, according to the peculiar classing rules of the Gujarat Survey, these annas have to be doubled before applying the maximum rate, i. e., the Soil annas of the number above are annas 6-6 doubled or 13 annas.

(ii) The letter "A" stands for "Akasia" which is 6 annas in the first two shares and 4 in the third, while the letter "T" stands for "Talar" (tank), by which the classer in Gujarat was accustomed to denote "Himayat" in the classification books.

EXAMPLE NO. 13.

*New Rice (with Himayat and Sub-soil Water).*



	Class.	Shares	Soil	Position	Himayat
	6	1	6	4	4
	6	1	6	2-6	4
	7 1/2	1	4	2-6	2
a	Total ..	3	16	9	10

Average bhag annas .. 5-4      3      3-4  
 Add—Position .. 3-0

Total .. 8-4

Kayam bhag annas— as. p.  
 Soil .. 8 6  
 Himayat .. 3 6  
 Sub-soil Water (1st class) .. 1 0

*Water in neighbouring well sweet and at depth of 24 feet.*



Class.	Annas.	Description.
2	2½	.. Where the land lay on the same level as the existing rice land, or Dry-crop in the vicinity, and nothing had to be done but to build the embankments to impound the rainfall.
3	1	.. Where the land was slightly above the level of the existing rice land, or Dry-crop in the vicinity, and some excavation had to be made.

If in lands coming under classes 1 and 2 any appreciable excavation had to be done, a reduction of one anna in each case was allowed.

*Himayat,* } as for Old Rice.  
*Dusota,* }

(Vide Example No. 13 on the opposite page.)

#### C. - Vagedu Rice.

Vagedu Rice land is that in which rice is sown broadcast as a mixed crop with *kodra*, *tuver*, etc. The factors of value taken into account were Soil, Sub-soil Water, Akasia and Himayat.

*Soil,* } as for Dry-crop.  
*Sub-soil Water,* }

*Akasia*—additions were made to the Soil annas up to a maximum of 4 annas.

*Himayat*—in the few cases where tank irrigation was used an addition of 2 annas was made on this account.

#### NATURAL BAGAYAT.

This term is applied to the extraordinarily rich class of Garden land which is found only in the Surat district and there chiefly in the talukas of Bardoli, Chikli, Pardi and Chorasi. It is described as a "splendid sugarcane growing soil . . . of a rich loamy mould, varying in colour from reddish-brown to deep chocolate. This soil is generally of extraordinary depth, and good water is always found from 12 to 35 feet below the surface . . . It is extraordinary to see the tenacity of this soil; so rich is it from top to bottom that a *kacha* well sunk 30 feet through it looks like a hole in a plumcake . . . The soil is both *jirayat bagayat* and rice *bagayat*. The very best crops of rice of the description known as *manjurvel*, followed by *methi*, *tur* or *val*, are produced yearly, and every fourth year sugarcane if the soil is well manured."

It is plain from Captain Prescott's remarks that he clearly recognized the difference between the Natural Bagayat and ordinary Dry-crop class of soil, yet strangely enough he failed to do so in the actual classification of the Original Survey; for, instead of distinguishing between them, *all* land growing sugarcane was classed as "Uttam," irrespective of the class of soil or even the water facilities. The result was that this system led to the inclusion in Natural Bagayat of a large quantity of land, which though it produced sugarcane was either of inferior quality or presented no unusual facilities for irrigation, and could not properly be called Natural Bagayat at all. At the Revision Survey these anomalies were remedied and the Natural Bagayat class of land separately distinguished and classed.

For classification purposes this Natural Bagayat class was again sub-divided into 2 sub-classes, *viz.*, Uttam Bagayat and Uttam Prakar :—

(1) *Uttam Bagayat*, being land possessing both the peculiar soil and also irrigational facilities of sweet water obtainable at a depth of not more than 30 feet;

(2) *Uttam Prakar*, or land possessing the peculiar soil, but with a water-supply obtainable at depths below 30 feet or not perfectly sweet.

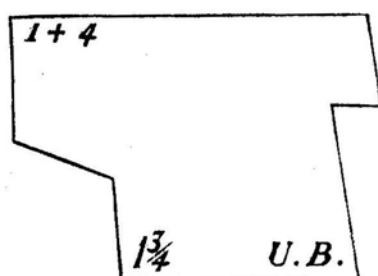
These two sub-classes were again sub-divided into Rice, old and new, and Dhekudiat.

(1) *Uttam Bagayat—Dry-crop.*

The characteristic features of Uttam Bagayat are, as mentioned above, the Uttam soil and a supply of sweet water at a depth of not more than 30 feet; and these are the elements taken into account in the classification.

(a) *Soil*.—The characteristic class of soil is that referred to by Captain Prescott, *viz.*, a rich loamy mould, varying in colour from reddish-brown to deep chocolate. The classification scale of this soil was based upon that of the 1st Order of ordinary Jirayat, with the proviso that it must not be reduced by faults, either of depth or quality, below 14 annas. This meant that soil, even though of the Uttam kind or texture, which was either less than  $1\frac{1}{2}$  *haths* in depth or being of full depth ( $1\frac{3}{4}$  *haths*) had more than one fault of any kind, was taken out of the Uttam class

**EXAMPLE No. 14.**  
*Natural (Uttam) Bagayat.*



<i>Class.</i>	<i>Shares.</i>	<i>Annas.</i>
$1 + 4$	$1$	$24$
<hr/>		
<i>Average bhag annas</i>	$..$	$24$
<i>Sub-soil Water</i>	$..$	$9$

*Water in well sweet at a depth of 15 feet.*

**EXPLANATION.**

(i) *The figure 4 represents the number of gūns of 2 annas each added to the Soil annas. Thus, "class 1 + 4" equals 16 + 8 annas or 24 annas.*

(ii) *The Sub-soil water annas (9) have been calculated according to the special Sub-soil scale for Uttam Bagayat land.*

and considered to be ordinary Dry-crop. The minimum being 14 annas the superior classes of this soil—meaning by “superior” possessing a higher quality of texture or grain within the class itself—were provided for, as in the case of Bhatha, by the addition of 4 extra classes or *gūns* of 2 annas each, or a total of 8 annas, making the maximum classification value of such soil 24 annas.

Practically speaking, therefore, there were 6 classes of Uttam soil, viz. :—

Class	Depth.	Anna value.
1	$1\frac{3}{4}$ - $1\frac{1}{2}$ <i>haths</i>	.. 24 (16 + 8)
2	Do.	.. 22 (16 + 6)
3	Do.	.. 20 (16 + 4)
4	Do.	.. 18 (16 + 2)
5	Do.	.. 16 ..
6	Do.	.. 14 ..

(b) *Water*.— The standard of water-supply being that it must be perfectly sweet and obtainable at a depth of not more than 30 feet, the scale for this element was as follows : -

*Uttam Water Scale.*

Soil Annas.	Sweet throughout the year.		
	A	B	C
	10 ft. and less.	Over 10 ft. and up to 20 ft.	Over 20 ft. and up to 30 ft.
20 annas and above ..	12	9	6
16 annas and under 20 annas ..	8	6	4
14 annas and under 16 annas ..	6	4-6	3

(Vide Example No. 14.)

(ii) *Uttam Bagayat, Dhekudiat.*

The factors of value were Soil, Sub-soil Water, and Dhekudiat Water, of which the two former were classed according to the Uttam Bagayat scales and the latter according to the ordinary Dhekudiat scale (*vide p. 347*).

(iii) *Uttam Bagayat, Rice.*

(a) *Old Rice.*—The factors of value were Soil, Sub-soil Water, Akasia, Himayat and Dusota, of which the Soil and Sub-soil Water were classed as for Uttam Bagayat, and the other three factors as for ordinary Rice.

(b) *New Rice.*—The factors of value were Soil, Sub-soil Water, Position, Himayat and Dusota, the first two factors being classed as for Uttam Bagayat, and the last three as for ordinary Rice.

(2) *Uttam Prakar.*

This class consists of land, the soil of which is the true Natural Bagayat, but having a water-supply which is either obtainable at a depth of more than 30 feet or is not perfectly sweet throughout the year. Like Uttam Bagayat it is divided into the three sub-classes of Ordinary, Dhekudiat and Rice.

(a) *Dry-crop.*

The factors of value are Soil and Sub-soil Water which were classed as follows :—

*Soil*—as for Uttam Bagayat.

*Sub-soil Water*—either half the *ordinary* Sub-soil annas were applied, *i. e.*, up to a maximum of 3 annas, or none at all.

(*Vide Example No. 15.*)

(b) *Dhekudiat.*

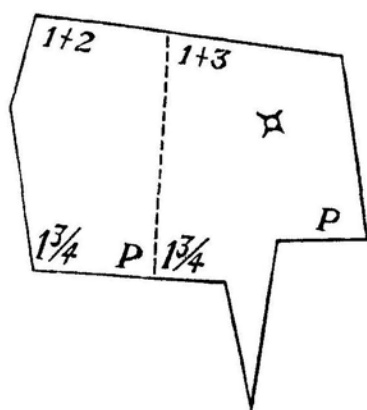
As for Uttam Bagayat Rice with the substitution of the Uttam Prakar Sub-soil Water scale for that of Uttam Bagayat.

(c) *Uttam Prakar Rice.*

*Old Rice,* } both these were classed as Uttam Bagayat with the  
*New Rice,* } substitution of the Uttam Prakar Sub-soil Water scale.

EXAMPLE NO. 15.

*Uttam Prakar.*



Class	Shares.	Annas.
1 + 3	1	22
1 + 2	1	20
Total ..		2 42
Average bhag annas ..		21
Sub-soil water (2nd class) ..		1-6

*Water in well brackish and drinkable, at depth of 35 feet.*

EXPLANATION.

*The class is Uttam Prakar and not Uttam Bagayat because, though the soil is of the Uttam quality, the water is brackish and only obtainable below 30 feet.*

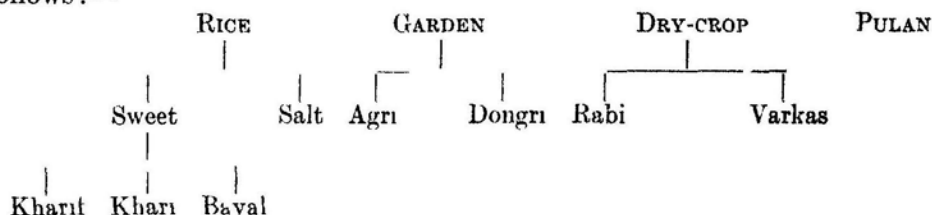
*(i) The figures 2 and 3 represent the number of gins of 2 annas each added to the ordinary Soil annas. "Class 1 + 3" therefore equals 16 + 6 or 22 annas, and "class 1 + 2" equals 16 + 4 or 20 annas.*

*(ii) The sub-soil water annas on a classification value of 21 annas would ordinarily be 3 annas, but for Uttam Prakar Soil they were halved.*

## CHAPTER V.

### THE KONKAN SYSTEM OF CLASSIFICATION.

THE Land Classes of the Konkan system of classification are as follows :—



#### RICE.

Rice lands in the Konkan are divided into two principal classes, *viz.*, Sweet and Salt, the former comprising the Rice grounds situated above sea-level, in which the main crop is grown by means of the moisture afforded by the rainfall and drainage from higher lands. Where the situation is favourable a second crop of summer rice (*vaingan*), pulse, etc., is sometimes produced by the aid of irrigation from streams or water-courses when the natural moisture is insufficient. In the cultivation of Sweet Rice the fields are ploughed and the plants transplanted therein after having been germinated in a specially prepared seed-bed. Salt Rice, on the other hand, is grown in lands situated close to the salt creeks, which have been re-claimed from the sea and which are, therefore, often embanked at great expense in order to guard against flooding with salt water. For the cultivation of Salt Rice the land is never properly ploughed, only a few clods being turned over here and there by the pickaxe. Neither is the land *râbed*, the only manure being derived from the decomposition of the stubble of the rice plants, nor is transplantation used, the seed being simply soaked until it has germinated, when it is sown broadcast and trodden into the ground.

#### A.—SWEET RICE.

Sweet Rice lands are divided into three sub-classes, *viz.*, Kharif, comprising the ordinary Sweet Rice lands, and two special classes called Khari and Baval, which are of very small extent.

##### (i) *Kharif*.

(1) *Old Kharif*.—The following account, taken from the Original Settlement Report of the old Nasrapur taluka, will shew the basis of the classification system of this class of land :—

"With regard to the classification of Rice lands, a great variety of different kinds of Rice are produced in the Nasrapur taluka, but the cultivators generally class them under the two denominations of *halva* and *garva*. The former include the early crops of rice, which are almost all the coarse and inferior descriptions of grain, commanding, comparatively speaking, a small marketable value. *Panvel patni* is the finest kind coming under this head, but it does not fetch the same price in the *bazar* as the *garva* sorts. The coarsest kinds are the *pampik*, so called from the circumstance of their being harvested during the monsoon: about the end of September being the time that the cutting of this kind of crop is commenced. All other descriptions of *halva* are usually harvested during the month of October.

"*Garva* is the term applied to the late crops. All the fine kinds of rice come under that denomination. They are longer in the ground than the *halva*, and as their cutting season does not commence until the beginning of November they necessarily require a situation where there is a good command of water or some internal spring to afford moisture after the regular monsoon rains are over. These descriptions always fetch from Rs. 2 to Rs. 4 a *khandi* more than the *halva*.

"I propose to take advantage of the abovementioned classification of the crops, not on that account merely, but because it affords a good standard of comparison by which we may estimate the relative values of the productive properties of each kind of Rice lands, and, moreover, will form, I anticipate, a good guide for our classers, as *halva* and *garva* fields are readily distinguished from each other."

The actual field classification was done in accordance with Soil and Water scales which were as follows:—

(a) *Soil.*

Class.	Depth in cubits.	1st Order.		2nd Order.	
		Yellowish, dark red, red or brown, and capable of producing "Garva" crops.		Red, grey or black, not capable of producing "Garva" crops, always sown with "Halva" crops.	
		a.	p.	a.	p.
1	1	8	0	6	0
2	$\frac{3}{4}$	7	0	5	0
3	$\frac{1}{2}$	5	6	3	6
4	$\frac{1}{4}$	4	0	2	0



*Faults.*—The chief deteriorating factors taken into account as 'faults' were, in the case of first order soil only, the presence of gravel or black soil, and, in that of both classes, the impregnation of the soil with salt. In either case a reduction of one, two or three classes was made according to the effect upon fertility. Where first order soil was below  $\frac{1}{4}$  *hath* in depth it was reduced to the second order.

A peculiar class of fault is that found in—what is called—*jalvat* land, which consists in the liability of the crop to rot owing to excess of moisture. This results in water-logging which is accompanied by the production of a kind of white grass which is generally found growing on it. There are several varieties of this class of soil which were always considered as second order and reduced one or two classes according to the liability of the crop to rot.

In general no conventional signs were used to denote the kind of fault for which reduction was given and the reason for such reductions, where made, is, therefore, usually a matter of conjecture. Sometimes, however, the sign  $\vee$  was used for one fault,  $\nabla$  for two faults, and so on.

#### (b) *Water.*

The water-supply in the case of Sweet Rice lands is derived from one or more of three sources, *viz.*, from Natural Moisture due to drainage from higher grounds, from *Pāts* or water-courses, and lastly from Tanks, *Nalas* or Wells. The use of the latter two sources is generally to produce a second crop of vegetables, pulse, etc.

#### (i) *Natural moisture.*

Class	Annas.	Description
1	8	.. Fields well embanked : drainage good. <i>Garva</i> crops, such as <i>ambe mohor</i> , <i>patni</i> , etc., usually grown.
2	6	.. Fields well embanked : full crop of <i>halva</i> grown with certainty.
3	4	.. High-lying fields : <i>halva</i> crops grown, but full crop uncertain.
4	2	.. High-lying fields : no drainage from higher grounds ; or fields not level : without embankments.

(Note —In Ratnagiri there were five classes of water-supply similar to the above, classed at 8, 6,  $4\frac{1}{2}$ , 3 and 2 annas respectively.)

The anna values according to this scale might have additions or reductions according to the possession of certain natural advantages or disadvantages as follows:—

*Additions—*

- (i) Where sugarcane grown occasionally .. 4 annas.
- (ii) Where a second crop of grain or pulse } 2 annas.  
grown.
- (iii) Where crops improved owing to } 2 annas (except in  
drainage from hills or village sites. } 1st class).

*Reductions—*

- (i) Where, owing to soil faults, *rabi* crop } 2 annas.  
only cultivated every three or four }  
years.
- (ii) Where crops affected by salt water .. } 2, 4 or 6 annas ac-  
cording to damage.

(ii) *Water-supply from pdts.*

The classes of supply were as follows:—

Class.	Annas.	Description
1	6	.. (a) Supply sufficient for late crop of summer rice ( <i>vaingan</i> ) and lasting till the end of April.
	4	.. (b) Supply sufficient only for early crop of summer rice.
2	4	.. Sugarcane cultivable every two or three years, or <i>brinjals</i> or other vegetables.
3	2	.. Second crops of <i>nagli</i> , <i>kulit</i> , etc., cultivable.

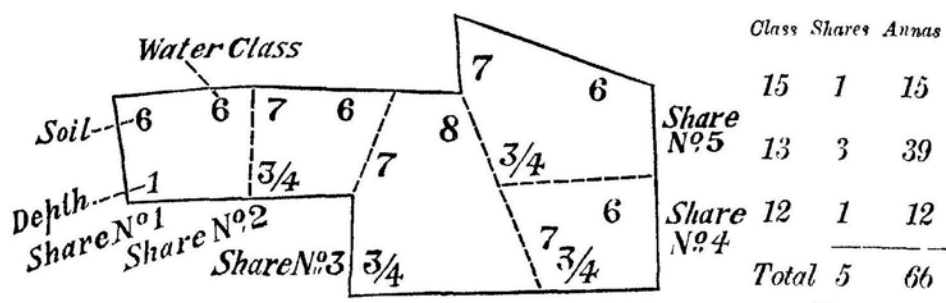
Where the water-course was crossed by *nalas*, necessitating the use of troughs or manual labour to bring the water, the additional annas were reduced by 2.

(iii) *Water-supply from tanks, nalas or wells.*

Class.	Annas.	Description.
1	2	.. Where summer rice grown by means of irrigation by <i>rahats</i> or <i>uktis</i> .
2	1	.. Where <i>nagli</i> , <i>kulit</i> or other pulse grown.

# EXAMPLE NO. 16

## Sweet Rice.



Bhag annas .. 13-2

Kayam Bhag annas .. 13-0

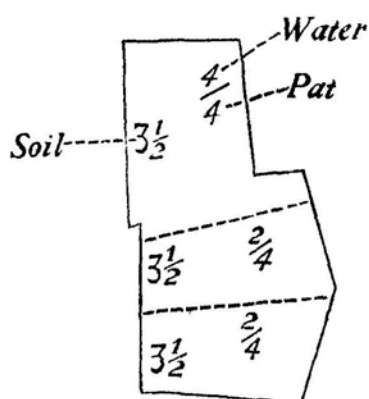
Water reduced one class on account of excessive moisture causing the crops to rot.

### EXPLANATION.

(a) The figures give the depth of soil, soil annas and water class for each share as shewn. Faults of soil are not given when, as in the left hand share, the soil annas have been reduced on that account from 8 to 6. Nor is the soil class given, whether first or second, as it is in the Deccan and Gujarat Surveys.

(b) By 'Class 15, 13 and 12' is meant the combination of soil and water annas, share No. 3 having 7 as. soil + 8 as. water = class 15 annas : and so on.

EXAMPLE NO. 17.  
Sweet Rice (watered from a pát).



Class.	Shares.	Annas.
$11\frac{1}{2}$	1	$11\frac{1}{2}$
$9\frac{1}{2}$	2	19
Total ..		$30\frac{1}{2}$
<hr/>		
Bhag annas ..	..	10-2
Kayam bhag annas ..	..	10-0
Division of anna valuation—		
		as. p.
Soil ..	..	3 6
Water ..	..	2 6
Pát water ..	..	4 0
Total ..		<hr/> 10 0 <hr/>

EXPLANATION.

The figures give the soil, water and pát annas. Neither the depth, class or faults, if any, of soils are shewn, but only the annas.

Where the water-supply was only used for two or three months to supplement the natural moisture, the additions were 4 and 3 annas respectively.

In making entries regarding these different water classes in the *prati* books when more than one class of water was present in the same number, the annas for each class were shewn as  $\frac{a}{b}$ , the top figure referring to the Natural Moisture class, and the lower to the *pât* or tank class as the case might be. In cases where a monsoon crop was either not grown at all or only occasionally, the Natural Moisture class was either not applied or reduced to 2 annas, and the entry in the *prati* book shewn as, e. g.,  $\frac{a}{6}$  or  $\frac{2}{6}$ . In the Kolaba district, after 1885, lands of this kind with a water class of 0, were treated as *varkas*.

(*Vide* Examples Nos. 16 and 17.)

(2) *New Kharif*. New Rice lands in the Thana and Kolaba districts were classed exactly as Old Rice, but were assessed by the Rabi Maximum Rate (*vide* Part I, p. 182). In Ratnagiri there are no New Rice lands, the original classification having been declared final before the introduction of the Revision Settlements.

#### (1) *Khari*.

This class of Rice land is defined as that formed on laterite plateaux, either naturally by the accumulation of soil or artificially by hollowing out the laterite rock or surrounding small areas with stone walls and filling up the interior with soil brought from elsewhere. The produce is precarious, depending on the rainfall. The soil is always *râbed* and the seed sown broadcast. The factors of value are soil and water.

*Sorl*. Classed as Sweet Rice of the second order.

*Water*. Classed at 3, 2 or 1 anna according to the situation and nature of the crop that may be expected.

It may be noted that, previous to 1885, Khari land was classed for soil only in 2 classes : first 12 annas and second 8 annas, the water factor being disregarded.

(iii) *Baval*.

This class of Rice land is defined as that formed from the accumulation of soil in the natural hollows existing in the laterite plateaux: it is sometimes extensive, and, being generally basin-shaped, retains the rain-water and produces fair rain crops but requires *rabing* like *khari*.

The classification was done exactly as for *khari*.

## B.—SALT RICE (KHARAPAT OR KHAJAN).

(i) *Old Rice*.

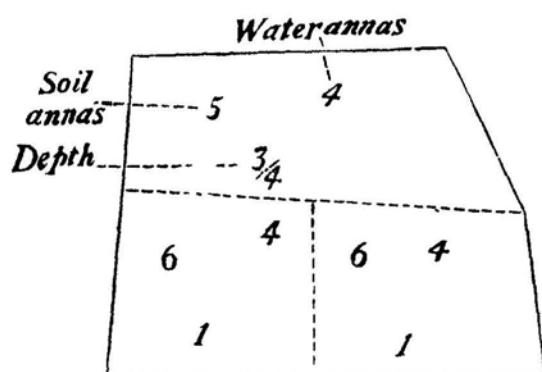
In spite of the differences in kind and also in method of cultivation, there is a broad, general correspondence between the seasonal varieties of Sweet and Salt Rice which made for the adoption of the same basis of classification, the *choka* and *rateh*, or red and white rices of the Salt lands, being the exact counterparts of the *garva* and *halva* of the Sweet. The factors of value are soil, water and *dusota*, or facility for growing a second crop.

(a) *Soil*.—Two orders of soil were distinguished: first the reddish soils, such as, being comparatively distant from the sea or under the influence of hill drainage, are found only slightly impregnated with salt; and secondly the black soils, which are the more numerous, and are met with in different degrees of fertility according to the quantity of salt they contain.

Class.	Depth in cubits.	1st Order	2nd Order
		Reddish coloured soil, distant from the sea or under the influence of hill drainage.	Black soil, under the influence of salt water with no direct drainage of sweet water.
		Annas.	Annas.
1	1	8	7
1	1	8	7
2	$\frac{3}{4}$	7	6
3	$\frac{1}{2}$	6	$4\frac{1}{2}$
4	$\frac{1}{4}$	5	3

EXAMPLE NO. 18.

*Salt Rice.*



Class.	Shares.	Annas
10	2	20
9	1	9
Total ..	3	29
<hr/>		
Average bhag annas..	as. 9	p. 8
Kayam bhag annas..	9	6

EXPLANATION.

The above number is waste and the bandh being broken it is overflowed by salt water. The classification has been done accordingly. As usual in the Konkan neither the order of soil or the faults are shewn.

*Faults.*—As for Sweet Rice.

(b) *Water.*—At the Original Survey the Water factor of Salt Rice lands was classed according to the Sweet Rice scale, faults being given on account of salt impregnation. At the Revision Surveys the classification of Old Rice lands was confirmed ; hence, in the case of the greater proportion of Salt Rice lands, the classification of the Water factor will be found to have been done according to the Sweet Rice scale.

For New Rice lands, however, and also for all other Rice lands which had to be re-classed on account of mistakes made at the Original Survey, etc., the following revised scale was employed :—

Class.	Annas.	Description.
1	8	.. Rice fields adjoining sweet rice lands, or having the drainage of sweet rain-water from higher ground, or capable of producing the superior kinds of <i>choka</i> rice from the existence of surface springs or natural moisture.
2	6	.. Fields having a smaller supply of water than the above, situated on high levels and producing <i>halva patni</i> rice.
3	4½	.. Fields near salt water, producing only <i>rateh</i> crops and not yielding a good <i>choka</i> or <i>halva patni</i> crop, water-supply being fair.
4	3	.. (1) Fields near salt water creeks and near the dams, producing only <i>rateh</i> crops, or in which the salt water percolates through the soil. (2) Fields producing <i>bhore</i> and other medium kinds of <i>choka</i> rice, and having an inferior water-supply, the land sloping and water not standing upon it.
5	2	.. Land subject to flooding by salt water, or with standing pools of salt water.
6	0	.. Land washed over by salt water and having hollows retaining salt water, only about half the land producing crops, cultivation being done in patches only.

(c) *Dusota.*—Where a second crop was grown after rice owing to the advantage of situation—2 annas.

(*Vide* Example No. 18.)



*(ii) New Rice.*

New Salt Rice lands, just as new *kharif*, were classed in Thana and Kolaba as Old Salt Rice, but assessed at the Dry-crop maximum. There are no New Salt Rice lands in Ratnagiri, the original classification having been declared final.

## GARDEN.

Garden lands in the Konkan are divided into two chief classes, *viz.*, Agri and Dongri, the former comprising alluvial soils situated near the coast and the latter lands situated inland with gravelly soils. Both classes grow the same kind of crops, *viz.*, cocoanuts, *suparis*, etc., but the Agri class are much the more valuable owing to their natural advantages of soil, water-supply and situation, the Dongri lands having a soil of the *varkas* type, requiring much labour and artificial irrigation to produce crops considerably inferior to those of Agri. In the latter class of soils artificial irrigation is only needed occasionally, and, where necessary, is carried on by means of water drawn from tanks, wells or streams. In Dongri Bagayat such assistance is always required.

At the Original Surveys the system of classification in the case of both Agri and Dongri took account of 3 factors, *viz.*, Soil, Water and Trees, the existing number of fruit-trees being counted and a classification value imposed according to the scale given subsequently. This system still obtains in Ratnagiri, where the original classification having been declared final and not subject to any future general Revision by Government Resolution No. 2619 of 26th March 1884, it was decided at the Revision Settlement of the Mandangad petha of the Dapoli taluka that the rectification of the old classification system would be illegal. In Thana and Kolaba, however, a new system of classification was introduced at Revision by which the factor of Position was substituted for that of trees, the latter being clearly an unsafe basis as a permanent standard of relative value. By the factor of "position" was meant the situation of the field with reference to its capacity for receiving drainage from higher ground and accumulating a store of natural moisture.

It must, however, be noted that the assessment of Garden lands in the Konkan, like that of *pātasthal* in the Deccan, was fixed, not by the application to the Classification values of a pre-determined *jantri*, but by the Superintendent personally after consideration of all the

circumstances affecting the fertility of each garden individually. Hence the field classification carried out according to the rules explained below was used rather as a guide than as actually determining the rate.

(i) *Agri Bagayat.*

This class of land is defined as

(a) land situated in the vicinity of salt water, rivers and creeks and on the coast, producing coconuts and *suparis* in alluvial and sandy soils with little or no irrigation owing to its large store of natural moisture ;

(b) land producing—generally with irrigation—grafted mangoes, fruit-trees, sugarcane, vegetables, etc., in Dry-crop soil superior to *rabi*, though not being rice or *varkas* land proper.

The factors of value taken into account, as previously stated, were Soil, Water and Trees in Ratnagiri or Position in Thana and Kolaba.

(a) *Soil.*—The soil factor was classed according to the following scale :—

Class.	Depth.	Annas.	Description
1	1½ cubits.	8 ..	Soil consisting of sand and earth in about equal proportions.
2	1½ ..	6 ..	Soil of reddish colour containing more sand than earth.
3	..	4 ..	White, sandy soils near the sea-shore.

*Faults.*

- (i) Karal—soft sandy stone or limestone. If found within 1 *hath* of the surface, soil reduced one class.
- (ii) Hard sand-stone .. .. (a) In 1st class soils : if found within 1 *hath*, soil reduced two classes.  
 (b) In 2nd class soils : if found within 1 cubit, soil reduced one class.
- (ii) If *supari* and coconut trees exposed to the south wind or affected by white ants. Soil reduced one class, except in 3rd class.

As usual in the Konkan, no conventional signs seem to have been fixed to denote these faults.

(b) *Water*.—The principal sources of water-supply are three, viz., Natural Moisture, Tanks or Streams, and Wells, to which must be added that of manual irrigation by *ghagars* or pots.

(i) *Natural Moisture*.

Class.	Annas.	Description.
1	8	.. Where the coconut and <i>supari</i> trees flourish, the moisture being perennial without being excessive.
2	6	.. As above, but situated in inaccessible places in the hills.
3	4	.. Moisture not perennial, but decreasing in the hot weather, causing the trees to suffer.

Where moisture excessive, a reduction of one class to be made.

(ii) *Tanks and streams*.

Class.	Annas.	Description.
1	8	.. Water received by natural flow through a <i>pât</i> , lasting throughout the year and ample for watering every second or third day.
2	6	.. As above, but lasting only till April and afterwards falling short.
3	4	.. Natural flow till March, but afterwards necessitating a reservoir for collection and flow of water
4	2	.. Natural flow to January or February only.

A reduction of one class was made—

a) when the *pât* water had to be conveyed from a large *nala* by a trough;

(b) when the water had to be raised to the *pât* by hand at the end of the season;

(c) when irrigation from the tank or stream was by means of a *rahat* or *ukti*.

## (iii) Wells.

The instrument of irrigation is the *rahat* or Persian wheel worked either by bullock or hand power. The wells are either "*pakka*," i. e., permanently built of brick, or "*kacha*," i. e., temporary and built of rubble only. For purposes of classification they were divided into four classes according to their supply of water and their permanent or temporary character.

Class.	Annas.	Description.
1	8	.. Well made of stone laid in mortar: water-supply all the year round and sufficient for watering every other day or every third day, as required.
2	6	.. Well <i>pakka</i> or <i>kacha</i> , with supply diminishing about April and only sufficient for watering once in eight days.
3	4	.. Well <i>pakka</i> or <i>kacha</i> , with supply decreasing in March: in April there is only enough for one watering and in May it is quite dry.
4	2	.. Well <i>pakka</i> or <i>kacha</i> , but the <i>rahat</i> is used for only about two months after the rains.

In the *prati* book full details were required to be given regarding all facts bearing upon the question of water class, such as the depth of the water from the surface, the class of supply, the kind of well and its age if known, the quality of the water, etc.—for which see Konkan Classification Rules, paragraph 58. Details were also required regarding the number of fruit-trees in the garden and their kind, in accordance with the rules given subsequently under the head of the "Tree factor."

In applying this system of well classification, however, it was necessary to take into account another factor, *viz.*, the area irrigable. A *rahat* can only irrigate a certain area of ground, and the full classification value of 8, 6, etc., annas could not be applied to the whole survey number irrespective of its area, as that would have meant assessing as irrigated land which in the nature of the case was not irrigable. This difficulty was met in the following way:—It was found after a series of

experiments that a single *rahat*, working regularly, could irrigate about  $1\frac{1}{2}$  acres of land. In the case, therefore, of a number containing more than this area the full classification value of the well was spread over the whole field proportionately by dividing it by  $\frac{\text{the area of the field.}}{1\frac{1}{2} \text{ acres}}$ .

Thus, if the field were 3 acres in area and the *rahats* were second class, *i. e.*, valued at 6 annas, the proportionate value for the whole field would be annas 6, *i. e.*,  $1\frac{1}{2} = 3$  annas : in other words, the field was treated as possessing a half supply for the whole area instead of a full supply for half of it.

Conversely, if the field had two *rahats* working the allowance would be doubled.

(iv) *Irrigation by Ghagars or water pots.*

Under this system of irrigation the water is brought by labourers from the river, tank, well or other source in *ghagars* and poured over the irrigated area. Fields watered in this way were classed at 2 annas on account of their water-supply.

(c) *The Tree factor.*—This factor is now taken into account only in Ratnagiri. In justifying his adoption of the number of trees standing in a survey field as an element in classification value, Captain Francis took his stand upon the practice of former Indian administrations under which it was, he states, the custom “to consider 50 trees as the number to a *bigha* and, where less than that number were planted, a land rate was charged for the area considered unplanted” in proportion to the average number of trees over the whole area.

Under Captain Francis’ system of Tree classification, fruit-trees were divided into three classes, *viz.*,

(a) *Bardar*, or bearing, comprising all trees which have come into bearing or were in blossom and would, therefore, bear that season ;

(b) *Umedvar*, or young trees, or all those of which the stems shew above the ground, but have not come into bearing ;

(c) *Rops*, or seedlings ; those whose leaves only shew above the ground, no portion of their stems being visible.

In fixing the classification scale the unit number per acre was taken to be 60 bearing coconuts, 60 being substituted for the 50 of the former scale owing to the larger size of the acre as compared with the *bigha*. Land containing this number of trees was then classed at 16 annas with a descending scale for smaller numbers, as follows :—

No. of coconut trees in bearing per acre.		Anna valuation.
From	To	
60	55	16
54	48	14
47	43	12
42	34	10
33	26	8
25	18	6
17	14	4
13	9	3
8	6	2
5	4	1-6
3	1½	1-0
1		0-6

Where trees other than coconuts in bearing were found, they were reduced to the denomination of "bearing coconuts" according to the following scale :—

4 <i>umedvar</i> coconuts	=	1 bearing coconut.
4 <i>supari</i> trees	=	do.
1 grafted mango	=	do.
2 jack-fruit trees	=	do.

Other fruit-trees, such as *ramfal*, *kaju*, guava, etc., were to be counted and noted, but were not actually brought under the classification scale, though their number would be taken into account by the Superintendent at the time of fixing the rate of assessment.