# SIXTEENTH ANNUAL REPORT 

OF THE

# DEPARTMENT OF LAND RECORDS AND AGRICULTURE, 

BOMBAY PRESIDENCY,

FOR THE YEAR 1898-99.

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No. $\frac{1}{6: 1}$ of 1900.

## From

> W. P. SYMIONDS, Esquine, I. C. S.,
> Activg Survey Commissioner and Director, Land Records and Agriculture;

To

The Mon'ble J. W. P. MUIR-MACKENZIE, M.R.A.C., I. C. S.,

- Sucretary to Govermment, Revenue Department, Dombay.
Joona, ìth Ficruary 1000.
$\because \quad$ SIR,
$\therefore$ I have the honour to submit the annual report of tho Departmont of Land Records and Agriculture for the year ending 31st October 180 .


## CHAPTER I.

PREFATORY.
2. Mr. A. B. Fforde was in chargo of tho offce till bth December $1 \dot{S} 9 \mathcal{S}^{\prime}$, :When I received charge.
3. Under orders of Government, Mr. Fiordo visited tho Central Provinees in company with Mr. M. C. Gibb, I. C S., to study tho system alopted thery fn. . the preparation and maintenanco of a correct rocord of rights and interests in land. I made tours in the Surat, Khíndesh and Kolíha districts in connection with the revision survey work of Párdi, Jalálpur, Bulsír, Pimpalnor, Mahaid and Mángaon tálukas. Whilo at Surat and Dhulia I inspoctod tho Survoy IIcadquarter and District Survey Oflices there.
4. Mr. Mollison, the Deputy Director of Agriculture, besides supervising ;, the agricultural operations on tho Poona Farm, paid several visits to surat and inspected the farm there. IHe also inspected tho Nadiád. Farm and paid is visit to Ahmedabad to inspect the additional land roquired for the Municipal Sewago Farm. He visited Kanara to report on the question of assignment of beta lands for the cultivation of spice gardens.' He procecded to Madras to conduct the 1 oral and practical examination in $\Lambda$ griculture. The services of Mr. Mollison hare, since September last, been placed at the disposal of the Commissioner, N. D., in connection with famine grass operations in tho Northorn' Division.

## CIIAPTER II.

## LAND RECORDS ESTABLISIMMENT.

5. The Land Records stafl worked in the samo districts as in tho previous yepr. The Survey records of certain surveyed alienated villages in tho Khindesh, Poona and Sholapur districts wero transferrod to the Collector's chargo.
6. In the Southern Division, owing to provalenco of the plague at Belgaum, the Survey class was, as last year, beld at Bijápur and Kárwír. No class was opened at Alibág, the Circlo Inspectors being employed on famino duty, and in Katnggiri there was no candidate. In the Central Division, on account of prevalenco of the plague at Poona, Ahmednagar and Naisik, the annual Survey class has been postponed to March-April, but in view of the prevailing scarcity further postponement will be necessary.
7. The Circle Inspectors in tro tolukas of the Ratnágiri District performed their regular duties, while those of the other tilukas were cmployed on miscellancous work. In the fair scason nino Inspectors were engacred wholly on measuring Pardi numbers in fire talukas and one petha and one on disposal of miscellancous measurcpuent wera in the Dapoli talulia. The scrvices of ono lusp tor

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were placed at the disposal of the Executive Engineer for the demarcation of road-side boundaries, and he fixed the boundaries for a length of fifty miles. The remaining Inspectors disposed of miscellaneous measurement cases in November and December, and from January to the end of May they carried on the special boundary-mark inspection work under No. 104 of the Rules under the Land Revenue Code. The three villages of the Devgad Táluka, which were left over at the end of the last scason, were finished and the work made some progress in the Mandangad petha. The. Circle Inspectors also measured some Pardi numbers. The Pardi measurement work was completed in 188 villages out of 568. The work embraced 1,886 numbers covering an area of 908 acres estimated to yield an assessment of Rs. 354. In the rains, with the exception of three Inspectors who worked in the Huzúr Record Office under the orders of the IIuzúr Deputy Collector, the Circle Inspectors were employed at the District Survey Office in preparing Kamjasti patraks and duplicate copies of tipan books, correcting printed copies of village maps and sorting the survey records into $A$ and $B$ divisions. It has been decided to retain the full staff for two years more. In seven tálukas of this district the ordinary duties of Circle Inspectors are not at present carried out, but as there are now several villages which have lapsed to Government and are provided with the stipendiary village accountants, the practicability of working the rules in these villages is under the consideration of the Collector.

8. As in the last year one of the Circle Inspectors in the Ahmedabad district continued to do measurement work in the railway suburb ;at Ahmedabad.
9. Crop, Waste and Boundary-mark Inspection.-The average inspection work performed by Circle Inspectors is exhibited in the following table:- ;

| District. | Averiage bi mach Inspectorm |  |  |  |  |  | Average 1 rea of occupied Nambers in Асгев. |  | Averafe Area of inspected Numbert in Acres. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Average of daya of actual iuspection. |  | Number of Villages inspected. |  | Number of Survey Numbera (occupied and waste) inspected per diem. |  |  |  |  |  |
|  | 1898-99. | 1897-98. | 1898-99. | 1897-98. | 1898-99. | 1897-98 | 1898-99. | 1897-88. | 1898-99. | 1897-98. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Dhármár ... | 17 | 60 | 10 | 42 | 8 | 9 | 11 | 12 | 10.9 | 10 |
| Bijapar ... | 27 | 62 | 15 | 38 | 7 | 8 | 17 | 36 | . 16 | 16. |
| Belgamm - | 45 | 25 | 30 | 19 | 9 | 9 | 10 | 11 | 10 | 10 |
| Kanara . ${ }^{\text {a }}$ | 45 | 52 | 29 | 48 | 10 | 9 | 2 | 2 | . 18 | 2 |
| Ratnagiri ... | 57 | 49 | 9 | 9 | 4 | 4 | 8 | 8 | $\cdot 7$ | 7 |
| Kolába ... | 65 | 60 | 68 | 65 | 7 | 8 | -4 | 5 | 4 | 5 |
| Kbándesh -. | 71 | 67 | 49 | 48 | 8 | 8 | 10 | 10 | 9 | 9 |
| Nasik ... ... | 56 | 56 | 33 | 34 | 8 | 8 | 9 | 10 | 10 | 9 |
| Abmednagar ... | 72 | 92 | 86 | 87 | 7 | 8 | 12 | 13 | 12. | 11 |
| Poona ... ... | 69 | 65 | 42 | 43 | 7 | 7 | 10 | 10 | 11 | 10 |
| Sholupur , $\because$.. | 68 | 56 | 34 | 35 | 7 | 6 | , 21 | 20 | . 20 | 18 |
| Sattaraines '.. --. | 62 | 60 | 28 | 28 | - 8 | 8 | -8 | 8 | 1. 7 | 7 |
| Atmadabad , ... ... | 69 | 71 | 85 | 37 |  | 15 | 4.3 | 4 | 4 | ${ }_{1}^{4}$ |
| Kaita... ... | 65 | 69 | 30 | 38 |  | 13 | $2 \cdot 4$ | 2 | $1 \cdot 4$ | 13 |

The standard of 80 working days was reached in none of the districts, though more than 70 days were devoted to the inspection in two districts. As observed last year, this standard necessarily varies with local conditions and circumstances.

The number of days fell off in five districts, especially in Dhárwár and Bijápur; in Násik and Ahmednagar the average days of actual inspection were the same as last year, and the other districts showed an improvement. Employment of Circle Inspectors on plague duty caused considerable hindrance to the inspection work in Dhárwár, Bijápur and Kánara. In four other districts also the work suffcred to a small extent from the same cause. Urgent measurement work and absence of Circle Inspectors on leave contributed, as usual, to the reduction of inspection days. Absence through illness was common in the

Sátára District. In Ahmoduagar eight Circlo Inspectors wero emplorod for about a fortnight in completing measurements of lands taken up for the famine relief works in 1896-97 which had been begun by a special staff in 1897-93. In Khándesh three Inspectors in addition to 6 táluka classers remeasured and roclassed the lands damaged by the floods of tho Girna and Titur in 1890. In Kolába one Inspector was employed during most of the scason on special work in connection with khoti litigation in the District Court at Thina. In tho beginning of the season some time ras devoted at head-quarters to the instruction of the inexperienced Circle Inspectors in crop inspection. Hindrance to Circle Inspectors' test-work owing to village officers' absence at the time of test was noticeable in some districts, markedly in Sattara, notwithstanding the rulo of giving six days' previous notioe to village officers and obtaining thoir acknowledgment: Except in four districts the number of rillages inspected was ncarly the same as last year. In Belgaum, where the number of inspected villages was small last year, there was improvement in the ycar under report.

The daily tale of work was generally satisfactory and compares farourably with the last year's in four districts. The figures in columns 8 to 11 show that numbers selected for inspection were of fairly avorage sizo in all the districts.
; 10. The general results of the inspection are embodied in the following table :-

| District. | Villages inspected. |  | {fe3d5cc97-32bd-478c-b47e-b69eec6432ae} CBor  <br>  Ingrzorioy. }$\substack{\text { Occupied Lando. }}$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | 1898-99. | 1897-98. | 1899-99. | 1897-99. | 1888-99. | 1897-99. | 1898.93. | 1597.38. |
| 1 | 2 | ${ }^{3}$ | 4. | 5 | 6 | 7 | 8 | 9 |
| Dhárwár | 8 | 91 | 9 | 7 | 31 | 25 | 10.4 | 8.4 |
| Bijapur , ... | 28 | 81 | $5 \cdot 5$ | ${ }_{6} 6$ | 24 | 30 | ${ }_{6.5}^{6.0}$ | ${ }_{6.3}^{6.5}$ |
| Kınara | 24 | 79 | 9 | 8 | 18 | 15 | 9.7 | 8.9 |
| Rätnágiri ... | 100 | 100 | 10 | 9 | 43 | 55 | 10.4 | $9 \cdot 1$ |
| Kolába | 77 | 77 |  | 6 | 30 | 75 | $7 \cdot 4$ | 8.8 |
| Khándesh ... | 88 | 85 | 8 | 7 | 23 | 22 |  |  |
| Nasils... ... | 78 | 75 | 7 | 8 | ${ }^{23}$ | ${ }_{31}^{29}$ | 7.7 | 8.1 |
| Ahmednagar... | 97 | 89 | 7 | 8 | 23 | 31 <br> 37 | 7.7 5.6 | ${ }_{5}^{8.2}$ |
| Poona....: ... | 96 | ${ }_{99}^{98}$ | ${ }_{8}^{5}$ | ${ }_{6}^{5}$ | 39 40 | 37 42 | 6.0 | ${ }_{6.1}$ |
| $\underset{\text { Sholapur - ... }}{\text { Setara }}$ | 97 94 | $\stackrel{99}{92}$ | ${ }^{6}$ | 6 7 7 | ${ }_{36}^{40}$ | 4 | $\stackrel{\square}{7.0}$ | ${ }_{7} 1.1$ |
| Satara ${ }_{\text {Aldadabad }}$... | ${ }_{94}$ | 93 | 5 | 5 | 13 | 12 | 6.7 | 6.4 |
| Kaira... .... | 75 | 95 | 3 | 3 | 12 | 8 | 4.0 | $3 \cdot 5$ |

In the troo tạlukas of Ratnágiri all the villages woro visited and in five other districts more than 90 per cent. of the village came under inspection. In seron districts the percentage of inspocted villages was lower than last year. Tho reasons are those given above. The estent of crop inspection was gencrally sufficient except in Kaira and compares favourally with last ycar.
11. The rule requires that one-third of the wasto numbcrs in a villago or one-third of the numbers sclected for inspection should be inspected. The percentage actually inspected seems sufficient in all the districts except Ahmedabad and Kaira, where, however, some improvement orer last ycar is noticeable. The unduly high percentage noticed last year in Ratnágiri and Kolála was reduced to the proper standard.
12. The number of encroachment cases detected during the year in-

| Division. |  | 1838.99. | 1897-9S. |
| :---: | :---: | :---: | :---: |
| Southern |  | 801 | Sow |
| Central | ... | 1,057 | 870 |
| Northern | $\cdots$ | 476 | $7: 5$ | creasod 20 per cent. in the Central Division while there was a falling off to the extent of 0 and 34 per cont., respectively, in the Southern and Northern Divisions. More than three-fourths of the cases in latter divisions were contributed by the nerly equipped districts of Koliba and Kaira. In Dhárwár, Bijápur and Kinara owing to preralence of the plague rillare officers were unable to pay much attention to the subject. In the Central Division the encroachment cases wero numerous in Khiandosh and Nísilk. Of the cases detected in the Ahmednagar district, threefourths were contributod by one táluka (Akola). The marginal table indicates


| District. | Percentage of encroachments detected by villags ollicerl on the total number. |  | Distriet. | Percentage of eucroachments detected by village officers on the total number. |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1898.89. | 1897-98. |  | 1898-99. | 1897-9? |
| Dhárwár . | - | 21 | Násik ... | 10 | 19 |
| Bijajur ... ... | - | 10 | Alimednagsr | 2 |  |
| Belgaman ... | 12 | 5 | Poona .... | 14 | 3 |
| Kanara ... ... | 31 | 62 | Sholápur ... | 8 | 11 |
| Ratnagiri ... ... | 80 | 43 | Sâtára ... | 35 | 15 |
| Kolaba ... ... | 51 | 73 | Abmedabad | 70 | 63 |
| Ehâudesh .. | 15 | 19 | Eaira ... | 29 | 34 | that as regards the districts where there are stipendiary village accountants, the progress made by them in detecting encroachm ents was fair in Ratnagiri and Ahmadabad. In Kolába the percentage of detected cases was 51 and in the remaining two districts (Kánara and Kaira) it was as low as 30 owing to prevalence of the plague. The District Inspector of Kanara states that owing to frequent transfors of village accountants (shanbhogs) the duty of detecting cncroachments does not receive sufficient attention. Among the districts with heroditary village staff, Sátúra alone showed considerable improvement. In Kánara the District Inspector and the General Duty Inspector personally detected 99 and 15 cases, respectively, No improvement was noticeable in the number of encroachment cases disposed of by Mámlatdárs.

In Sholápur and Ratnágiri all the cases detected related to unauthorized cultivation. In Poona, Koliba and Belgaum the percentage of cases of unauthorized cultivation was respectively 69,47 and 27 . In Nasil also these cases were numerous. In Dhárwár and Bijápur no cases were detected. No details are reported from other districts. In the Poona District only one case, a notorious encroachment of long standing, was discovered during the year and reported to the Collector. Hundreds of toddy trees in Government land were encroached upon at Mundhva in the Haveli Táluka.
13. The marginal table indicates that the quality of the village officers'

| District. | Eutries found correct (percentage). |  | District. | Entries found correct (perceutage). |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1838-99. | 1897-98. |  | 1898-99. | 1897.98. |
|  | - |  |  | $\cdots$ |  |
| Dharmir ... | 53 | 69 | Nasik ... ... |  |  |
| Bijapur ... | 20 | 37 | Ahmednagar. | 63 | 63 |
| Relgaum ... | 57 | 66 | Poona -.. | 80 | 78 |
| Kanara ... | 75 57 | 76 | Sliolapur ... ... | 52 | 54 |
|  | 57 88 | 63 91 | Salára | 78 | 78 |
| Khindesh ... | 75 | 91 72 | Ahinedabad   <br> Kaira $\ldots$ $\ldots$ |  | ${ }_{-9}^{91}$ | work as compared with the last year deteriorated in eight districts. Mr. Lushington: considers that the: high percentages in Kânara and Kolába are too good to be trusted, especially in the latter district. In Násik the District Inspector noticod that in some villages the crop estimates of the village officers and Circle Inspectors exactly tallied. Me thinks that Circle Inspectors try to secure such tally to aroid further enquiries, and suggests that District Inspectors should take a small independent test of the village officers' work. It is probable that the village officers delayed their inspection till the Circle Inspectors came. Such cases were marked in Násik as well as in Dhárwár, Ratnágiri, Sátúra and Kaira.

14. Boundary-mark Inspection.-The Circle Inspectors' inspection is con-
 fined to tho marks in the survey numbers of which they mako tho crop or waste . inspection. The quantity of numbers inspectal was sulficient and compars favourably with that of the last year, except in six districts (vide columns 8 and 9 of the statement in para. 10 above.) No improvement was noticed in the village offcer's work except in Ahmednagar and Ahmadabad. Delay in commencing the inspection on the part of the village officers was marked in five districts. In Dhárwir and Bijapur the plague was probably responsible. Duo notice has been taken of the delay in Kolaba. A pathy on the part of village offcers in getting boundary marks repaired is a general complaint.
15. The subjoined table indicates the result of the District Inspoctors' test of Circle Inspectors' work:-


Adr the circles were visited in three districts only. $\Lambda$ s compared with the last year there was an increase in the percentage of circles visited in five districts while it fell off in seven districts. The District Inspectors of Dhírwár for the greater part of the inspection period and of Kaira for a fortnight were cmployed on plague duty. The test work of the Belgaum District Inspector was interrupted by the supervision of the special measurement work in connection with the Gokák Storage Reservoir and the settlement of discrepancies regardin: the Railway lands in the Railway Schedules and Survey Records. In Khindesh the District Inspector was party engaged in supervising the special work of remeasuring and reclassing the lands chamaged by the Girna Thords. 'In Alumadabad one circle only was not visited, the. District Inspector having to superviso the correction of mistakes in measurement books relating to land taken up for the Almadabad-Printij Railway. Tho District Inspector classed a largo area in one rillage in Viramgám tíluka. Besides the test of the Circle Inspector's work, the District Inspectors of Násik and Dijapur took a emall indejendent test of rillage officers' work. •The Kolíba District Inspector dovoted a yart of his time to giving instructions to the inexperienced Circle Inspectors, • 'The
employment of 11 Circle Inspectors in Kánara on plague duty is responsible for the low percentage of circles visited by the District Inspector. The extent of tost was generally sufficient and compares farourably with the last year in eight districts. The higher percentage of test work in some of the districts is attributed to the smaller number of villages visited by Circle Inspoctors on account of their cmployment on plague duty or special measurement work. The District Inspector of Ratnágiri spent a month and a quarter in testing the Pardi measurement work and for about two months travelled with the Superintendent in the Dápoli and Khed tálukas in connection with settlement enquiries. This accounts for the large decrease in test work, which is however anyple as cornpared rith the other districts. The quality of Circle Inspectors' work is fair in eight districts. In others there is considerable room for improvement as regards crop or waste inspection. In Sátára the deterioration in quality is attributed to new appointments of untrained Circle Inspectors. As compared with the last year, improvement is noticeable in two districts only. In three districts a few Inspectors were punished for bad work by fine or reprimand.

1 $\dot{6}$. The General Duty Inspector.- The General Duty Iuspector was mostly employed on original measurement and classification work in six districts and in the others on either original or test work. In Ratnágiri and Ahmedabad he held charge of the District Inspector's post for a month in addition to his own duties, and in Poona he enjoyed one month's privilege leave. In Kaira along with other Inspectors the services of the General Duty Inspector were placed at the disposal of the plague authorities for about three months. In Khándesh, Bijápur, Ratnágiri and Ahmadabad the General Duty Inspector in the fair season accompanied the Assistant or District Inspectors who were new to their work and were not declared competent to take an independent test of Circle Inspectors' measurement work. In Khándesh the General Duty Inspector also helped the District lnspector in supervising the measurement and classification of lands damaged by the Girna floods, and in Násik in settling a boundary dispute and demarcating certain alluvial land. In Dhárwárhe was occupied for three montbs with the measurement of lands irrigated by the Dhárwár Canal. In Ahmed-.: nagar he devoted one month and a half to measurement work in connection with the Kapurwadi tank and roads and quarries in the Nagar taluka. In Ratnágiri he measured and prepared a map for some Kauli landsat Unabi village in taluka Dápoli in connection with a civil suit against Government. In the rains the General Duty lispectors were, as usual, employed in scrutinizing corrections in survey records. In Poona the General Duty Inspector was placed in charge of the temporary establishment, engaged ta prepare the revision settlement papers of the Indápur táluka.. In Belgaum from July to Saptember he did the road measurement work which was left incomplete by the Circle Inspectors in the fair season. In Ratnágiri he compared the maps received from the Survey of India Department with the Revenue Survey maps and corrected them where necessary.
17. Check of the Village Census.-The appended table shows the extent of the test.


- Not available.

The check census is confined to agricultural stock, and is taken in July, except in districts of heavy rainfall where the registers are examined concurrently with the crop and boundary-mark inspection in November to February. The test extended to all the circles in seren districts as against nine in the last year. Fourteen circles remained unvisited in Násik, 10 in Kánara and from 1 to f in Khándesh, Sátíra, Bijápur, Belgaum and Koliba owin'r to special measuroment work, plague duty, sickness, detention at the tiluka ollico for the crop compilation work or deputation to tho Survey Department. In threo circles of Násik this test hitherto taken in July was ordered by tho Collector to bo dono concurrently with the crop inspection. In the other circles tho work was prevented by the detention of Circle Inspectors at tho tiluka ollico or thoir employment under instructions from the Survey Department on work in councction with the introduction of revision survey rates into Nind gaon taluka. The Circle Inspectors in Kánara were on plaguo duty in tho inspection period.

The percentage of villages tested as far as given seems fair except in one or two districts. The test work was reduced by the causes mentioned in the last paragraph, and by the absence of village officers especially in Nasik and Belgaum. It is noticed that the detention of Circle Inspectors at the taluka oflice was due to delay on the part of the village officers in submitting the villago crop returns. The Collectors have been requested to impress on the táluka oflicers tho nocossity of getting in the village returns punctually. The suggostion that in the 11 circles in the Sátara District in which the crop inspection period has been curtailed to three months, the month of November may be utilised exclusively to check census, seems worthy of adoption.

The quality of village officers' work was generally fair oxcept in Kánara and Kaira, whereas in six other districts as compared with the last ycar it deteriorated. In Kaira, the habit of filling in the census registers at the village chavdis noticed in the last report does not seem to have been checked during the year. In seven districts only the District Inspector's test was sufficient. The District Inspector of Poona was engaged on the preparation of the Indipur Me. vision Settlement papers, and in Ratnágiri, the District Inspector was occupied with the settlenent enquiries in the Dápoli táluka. In Belgaum, owing to the detention of the Circle Inspectors at the tiluka office for compilation work, the District Inspector could not commence the test till 20th July. In the remaining districts plague duty or other special work interfered with the test. The Circle Inspectors' work was generally satisfactory, but compared with the last year it showed detcrioration in two or three districts.
18. Vital Statistics.-The marginal table indicates the result of tho or-

|  |  | ${ }^{\text {S }}$ | cintin |  |
| :---: | :---: | :---: | :---: | :---: |
| Birthe omitted <br> Deaths omitted |  |  | $\begin{aligned} & 4172 \\ & 0.72 \\ & 830 \end{aligned}$ | ¢ |
|  |  |  | $\begin{gathered} 38 \\ .88 \\ 88.6 \\ 8.6 \end{gathered}$ | 12 | amination of Village Form XIV, as compared with the last year. It is satisfactory to notice a gradual improvement in the village oflicers' work. In Ah. mednagar and Sholapur the number of births omitted was more than double that of last year. $\Lambda \mathrm{s}$ remarked by the Collcetor of Dhárwár, the general improvement seems to be due to the constant and useful supervision exercised by the Táluka and District Officers owing to prevalonce of tho plague. The Circle Inspectors and a few District Inspectors also tosted the other Sanitary Department Forms. In Dhárwar in some villages the cattle-discace form (Village Form XIV E) was not kept, though rinderpest was actually prevalent there. All errors discorered were immediately reported to the Duputy Sanitary Commissioners.

19. Maintenance of Boundary-marlis.-The complete boundary-mark. inspection, which consists of the repair village by villaze of boundary marks for
the maintenance of which Government is wholly or partly responsible, was as usual carricd on in the prescribcd period (March-May). The following table exhibits the progress made:-


The figures entered against Kolába in the last report having been found to be of doubtful accuracy, the correct number of villages inspected in the last season was subsequently ascertained, and has been entered in column 4. The decrease in Ahmednagar in the completed villages at the beginning of the current season is due to the omission of the incompleted villages, and in Násik some of the villages are still incomplete. The progress of the work was fair in Khándesh,

- Sátára and Kolába, At the present rate of work, the inspection of all the villages can be fairly completed in the prescribed period in the Central Division and in Kaira, Bijápur and Ratnágiri. In the remaining districts 18 to 22 years will be required. The inspection work was wholly suspended in Dhárwár, Bijápur and Kaira owing to the employment of Circle Inspectors on plague duty, and in Belgaum on measurement work which had accumulated owing to the plague and scarcity. The plague also interfered with the work considerably in Kánara and to a small extent in Khándesh and Násik. As usual, the disposal of measurement work took up much of the Inspectors' time in most of the districts. This work included in Khándesh the re-measurement and re-classiication of lands damaged by the Girna and Titur rivers and the demarcation of a land taken up by the G.I. P. Railway for enlarging the railway line. In; Sátára the measurement of Kadim Inâm lands brought under settlement was: included, and in Poona, Ahmednagar and Belgaum measurement of roads. In the last district the disforested area in one táluka was measured and the work of substituting stones in place of earthen mounds in survey numbers usually flooded by the Krishna was satisfactorily carried out in one village. The Supcrintendent, S. D., inspectcd the latter work. Some of the Circle Inspectors in Násik and Ahmednagar did pot-pahani work or prepared revision survey jamábandi papers, and the services of some Inspectors in the Sátára District were lont to the Survey Department to help in measuring and classification work. The number of days lost to inspection work in Satára owing to sickness was larger than in the last year.

Tho days actually devoted to inspection work ranged from 62 in Kolába to 22 in Ratnígiri against the standard of 75 days. The daily tale of work
attained at the first inspection varicd from 97 marks in Sititra to 30 in Ratnágiri, and at the sccond inspection from 52 in Sholípur to 17 in Ratuagrivi. As compared with the last ycar, the first inspection showed goneral deterionation, but there was improvement in the numbor of marks examined at the second inspection, except in Ahmadabad and Kolába. Of the marks examined mor than half were found in disrepair in four districts, and in Almednagar and Sholápur the percentage of such marks was as high as 70 . Of the marks found out of repair or missing all wero re-examined in Ratnágiri, and in others from 70 to 94 per cent. Of these, except in Kánara and Kolaba where the pereentage stood respectively at 43 and 42 , the marls repairod by the rayats were found to represent from 71 to 92 per cent. The number of marks remaining to be repaircd at the end of the season was practically nil in Khisndesh, Almednagar, Poona and Sátára, while in other districts it ranged from 3.0 in Nísils to 15 in Kolába. The remaining marks, which represent from 3 per cent. in Ahmadabad to 46 per cent. in Kánara of the marks re-osaminod, were repaired by Circlo Inspectors by hired labour. Re-inspection was much in arrears in Poona, Sittira and Kolába ; shortness of the daily work is attributed to tardiness in recouping the Circle Inspectors' permanent advance, which was a general complaint. The account difficulty in paying the Circle Inspector's bill immediately on its reccipt at the táluka office was completely removed by the Accountant Gencral's ruling. The orders were, however, received by the Circle Inspectors too late in tho scason. It is hoped that there will be no room for this complaint in future. In four dis: tricts difficulty was found in getting labourers to repair marks found out of repair. In such cases Circle Inspectors have no alternative but to induce tho rayats to repair them, which is naturally a slow process. Tho District Inspector of Poona points out that under the rule restricting the halt of au Inspector in a village to a month, some villages must remain unfinished at the end of a season. It would, however, not be advisable to alter the rule.

The rule of deputing the Inspectors of circles in which the work is forwarl to assist in circles in which it is behindhand, was carried out in three districts. In three districts some of the circles were inspected a second time. In the Central Division the last year's arrears of the second inspection wero partly cleared off in four districts. It is necessary that such arrears should be finished before a new village is commenced.

| District. | Number of Encroachment. | Number of Marks fixed by measure ment. | District. |  | Number of Encroachments. | Namber of Marka fled by incasurement. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Dharwar ... | ... | * | Nasik ... | -. | 138 | 125 |
| Bijápur ... | ... | $\cdots$ | abinednagar | - $\cdot$ | 16 | 3.95 |
| Belgsum ... | $\cdots$ | ... | loons ... | ... | 100 | 152 |
| Kánara ... | 88 | $\cdots$ | Sholdpur ... |  | 143 | 78 |
| Ratnágiri ... | 29 | 204 | Saters | -* | 188 | 83 |
| Koliba ... | 422 | 897 | Ahmadabad | . | 7 | -* |
| Ehandeah ... | 123 | 20 | Kaira ... | - | ** | ** |

Eocroachments detected and marks fixed by measurement during tho inspection aro specified in the margin.
The figures show a decrease below those of last year except in two districts. measurement and classing work performed by circle inspectors $\because$ 20. The usual table is appended :-


| Classes of Cases． | Soutazam Division． |  |  |  | Cemtral Divibiow． |  |  |  | Noxthrim Divisiox． |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 呩 |  |  |  |  | 产 ${ }^{\text {g }}$ |  | 䔡 | 苞 | 它 | 宮 |  |
| 4．Disputes requiring fixing of boundary－marka by fiche－ books ．．． | 441230 | $\begin{aligned} & 277 \\ & 336 \end{aligned}$ | 319 | 399 | 734374 | $\begin{aligned} & 656 \\ & 628 \end{aligned}$ | 862762 | 528 | 104 | $\begin{aligned} & 124 \\ & 240 \end{aligned}$ | 182277 | 4686 |
| 5．Encroachments ．．．．．．． |  |  | 3：0 | 246 |  |  |  | 3£0 | 123 |  |  |  |
| 6．Measurement of alterations cansed by alluvion and diluvion ．． | 131 | 85 | 117 | 103 | 54 | 101 | 110 | 45 | 10 | 66 | 63 | 13 |
| 7．Messurement of land re－ quired for public pur－ poses－ | 50 | 51 | 35 | 66 | 2 | 12 | 11 | 3 | 4 | 17 | 15 | 6 |
| （b）Tanks $\quad .$. | 13 | 16 | 20 | 9 | 2 | 2 | 2 | 2 | 1 | 4 | 2 | 3 |
| （c）Roads $\quad .$. | 46 | 41 | 33 | 5. | 32 | 65 | 64 | 33 | 4 | 11 | 9 | 6 |
| （d）Dhrmnshalas and other public buildings． | 17 | 57 | 48 | 26 | 21 | 26 | 30 | 17 | 25 | 50 | 47 | 28 |
| 8．Measurement of land for building sites ．．． | 88 | 130 | 325 | 93 | 78 | 201 | 218 | 64 | 103 | 214 | 236 | 87 |
| 9．Reclassitication of Survey numbers．．． | 8 | 7 7 | 7 | 2 | 13 | 15 | 12 | 16 | 4 | 10 | 11 | 3 |
| 10．Miscellaneous $\cdots$ ．．．$\ldots$ | 603 | 580 | 718 | 471 | 411 | 1，529 | 3，5ı8 | 382 | 155 | 800 | 741 | 2 J 4 |
| Total ．．． | 1，799 | 1，791 | 1，998 | 1，592 | 1，893 | 3，702 | 3，997 | 1，598 | 676 | 1，811 | 1，864 | 623 |

The want of tally between the arrears shown in the present return and the closing b：lance of the last year is noticeable in five districts．In the Central and Northern Divisions there is a slight increase，while the arrears in the Southern Division have decreased 4 per cent．The new cases received during the year fell by 27 per cent．in the Southern Division while there was an increase of 37 and 5 per cent．respectively in the Central and Northern Divisions．Except in Belgaum and Kolába，the decrease was general in the Southern Division owing to prevaleuce of the plague，especially in Dhárwár and Kánara．The increase in the Central Division was shared by all districts except Ahmednagar and was confined to classes 2,4 to 6,8 and 10 ．The progress of disposal was generally satisfactory，especially in Belgaum，where most of the Circle Inspectors were emploged ou this work throughout the complete boundary－mark inspection period （March－May）．In the Poona District，in accordance with Goverument Resolu－ tion No．8393，dated 20th December 1898，the measurement of oue road， 25 miles long，was completed，and the work of measuring the other roads was in progress． In Ratnágiri nine Circle Inspectors did Párdi measurement work．This work as well as the measurement work in counection with the land taken up for the Gokilk Storage Reservoir and for four roads in Belgaum District bave not been included in the above table．In the latter district 1,105 survey numbers were in all measured．

The extent of test by the District and General Duty Inspectors is indicated in the marginal table．The figures against the districts in the Central Division represent the percentages on the real measurement cases．Such cases are not separately reported from the South－ ern and Northern Divisions．：In Bijapur no test was taken either，by the District Inspector or by the General Duty Inspector．In Belgaum measurement work was tested in 115 survey numbers，but as the number of test measurement cases has not been given，columns． 2 and 3 can－ not be filled in．The test of measurement work is one of the principal duties of the District In－ spector and more attention to this work is requir－ ed．The District Inspectors of Bijapur and Ratnágiri were new to the work，and in Dhárwár the District Inspector was on plague duty．The District Inspector of Sátára，having to test the special measurement work in one Inám village in Koregaon Táluka and to dispose of a number of petitions and complaints made by the lnamdar and rayats，was unable to take more tests of the
regular measurement work. In Nasik the District lnspector settled an important dispute regarding the boundary between leint and Dharampor State. In most of the districts the General Duty Inspector was employed on original measuremont and classification work or otherwiso engaged. Tho Cirele Inspertors' work was generally fair.

The receipts of fees for work done for private individuals increased during

| District. | Amount. | District. | Amount. |
| :---: | :---: | :---: | :---: |
|  | Rs. |  | L. |
| Dharwár | 186 | Násik ... | 165 |
| Bijápur | 291 | Ahmednagar | 256 |
| Belgaum | 806 | Yoona ... | 369 |
| Kinara... | 339 | Sholdpur | 340 |
| Rntnagiri | 392 | Sâtára | 488 |
| Kolábs .. | 11 | Abmadabad | 1 |
| Khéndesh | 64 | Kaira ... | 41 | the year in the Central Division, while there was a falling off both in the Southern and Northern Divisions. The increase in the Central Division was the natural result of the increased work. The rule for charging fees for private work does not seem to have been strictly followed in Ahmadabad.

The cases of utilisation of Circle Inspectors for work not preseribed by the

| Divisiona. |  | $1898-99$. | $1897-09$. |
| ---: | ---: | ---: | ---: |
| Southern Division | ... | 74 | 20 |
| Central Divisinn | $\ldots$ | 65 | 20 |
| Northern Division | .. | 501 | 260 |
| Total | $\ldots$ | 640 | 308 | rules doubled during the ycar. The tendency towards such utilization was vory marked in Kánara, Násik, Ahmadabad and Kaira, and demands careful attention at the hands of the Collectors. In the Kolába district the men were employed on enquiries standing over from last year as to whether the works for which tagii advances had been given wero duly carried out. The Collector rightly observes that the District Inspector ought to have roturnol these cases to the táluka offices when he noticed them in the monthly Nikalpatrak.

## DISTRICT SURVEY OFFICES.

21. The usual table shows the work performed at the several district survey, offices:-

| District. | Numbra of Cases regrifad nbobssitatinct cobrbction in Sudifey Papers. |  |  | Noybre of Amabbands. |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Received during the including arreare of past years. | Disposed $\substack{\text { of during } \\ \text { the yeara }}$ the year | Arreari Auguat. | Received during tho includiag arreari or past yeare. | Corrected the jeur. the jeur |  |  |  |  |  |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 0 | 10 | 11 |
| Dhárwár | 89 | 89 | ... | 97 | 01 | 6 | 521 | 381 | 149 | 10.5 |
| 13ijapur ... | 21 | 21 | ... | 46 | 413 | ... | 07 | 258 | 2 | 14 |
| Beigaum | 43 | 43 | ... | 37 | 37 |  | 3.2 | 2,181 | 109 | 107 |
| Kı́nara ... | 64 | 62 | 2 | 88 | 83 | 2 | 570 | 417 | 4 | 2,103 |
| Ratnágiri ... | 311 | 239 | 22 | 279 | 207 | 72 | 383 | 35 | 102 | $11 \times$ |
| Kolíbs ... | 343 | 148 | 197 | 343 | 148 | 107 | 62 | 12 | 1 | 112 |
| Khándeah ... | 184 | 184 | 14 | 69 | 69 |  | 472 | 124 | ${ }^{6} 5$ | $1 \div 6$ |
| Násik... ... | 69 | 53 | 34 | 89 | 57 | 31 | 33.5 | 354 | 17 | aic |
| Abwednagar | 95 | 77 | 18 | 362 | 109 | 63 | 913 | 75 | 8.5 | 211 |
| Poona ... | 170 | 122 | 48 | 200 | 145 | 65 | 1,763 | 678 | 1,412 | 16:3 |
| Sholdpur ... | 22 | 21 | 1 | 18 | 17 | 1 | 155 | 228 | 87 | $8{ }^{3}$ |
| rátéra | 135 | 133 | 2 | 80 | 84 | - 2 | 857 | 646 | ${ }_{8}$ | 6.6 .1 |
| Alumadabad ... | 1,163 | 1,072 | 91 | 03 | 91 | 2 | 889 | 783 | 89 | 31 |
| Kaira... | 761 | 744 | 17 | 63 | 68 | ... | 012 | 171 | 6 | 14 |

Cases necessitating corrections in survey papers received during the year, including the arrears of the last year, were generally less, but tho correction work actually performed showed an increaso except in Dhirwár, Bijápur, Kúnara and Kaira, where owing to the employment of Circle Inspectors on plague duty measurement cases had to be kept back. Fifty-one cases have remaincd in arrear'; in Ahmadabad pending settlement of the question referred to tho Director. Thes progress of disposal was satisfactory, especially in Ratnágiri aud Kolíba. In Poona the head-quarter Assistant and the liecord-kecpor wero for $3, \frac{1}{2}$ montlis engaged on supervising the preparation of the Indapur settlement papers. bight experienced Talátis were employed temporarily for $2 \frac{3}{6}$ months io tho district
survey office at Alibaig to clear off the cases transferred by the Survey Department together with the records. The arrears left now are such as can be disposed of by the permanent staff in the district survey office. The heavy decrease in column 9 in Dharwar is due to non-performance of the complete boundary-mark inspection, and tho employment of the whole staff on measurement work is responsible for the large increase in Belgaum.

Besides the work specified in the above table much miscellaneous work is received and disposed of at the district survey offices. Survey records of some villages received from the Survey Department in three of the district survey offices, and the maps and gats of some villages received from the Photozinco Office in two district survey offices were sorted and stored in two divisions. The work of sorting out the original measurement and classification books of villages in which the revision survey work was done on a partial system and placing them with the revision papers was in progress where not finished. The work of sorting papers from the survey records for destruction was nearly finished in Dhärwár and Belgaum. The work for three tálukas in the Kolába District was done by the Survey Department and that for the remaining one táluka was completed during the year. In Poona 300 extracts were made from Prati-books for fixing assessment according to the classification value. The District survey office at Belgaum examined the measurement tipans of 457 survey numbers in connection with the Gokák Reservoir measurement work and made some progress in preparing the classification records for the same.

Fee Receipts.-The receipts were nearly the same as in the last year in the Southern and Northern Divisions, and increased 38 per cent. in the Central Division. The receipts increased in all the districts except four. The larger figures in column 3 against Belgaum, Poona and Sholápur are due to more measurement work done for private individuals. It is strange that there should be no receipts for making corrections in survey papers in the district survey offices at Bijápur and Ratnágiri.

| District. |  | Fris on 4 Ccount op supply op |  |  | $\left\|\begin{array}{c} \text { Feeg for } \\ \text { makivg corv } \\ \text { rections in } \\ \text { survey Papers. } \end{array}\right\|$ | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Extracts <br> from Survey <br> Papera to <br> applicants | Exuracts from Survey Papers to applicants through Circle Inspectors. | Village Maps. |  |  |
| Southern Division. |  |  |  |  |  |  |
| Dhárwár | $\ldots$ | 2 | 76 | 26 | 3 | 107 |
| Bijápur | ... | 2 | 18 | 18 | ... | 38 |
| Belgaum | ... | 4 | 99 | 18 | 16 | 137 |
| Kánara | ... | 1 | 48 | 16 | 25 | 90 |
| Ratnágiri | ... | 38 | - ... | 84 |  | 122 |
| Kolába | ... | 3 | ... | 71 | 77 | 151 |
| Total |  | 50 | 241 | 233 | 121 | 645 |
| Central Division. |  |  |  |  |  |  |
| Khándesh |  | 1 | 3 | 23 | 10 | 37 |
| Násil ... |  | 17 | 13 | 6 | 22 | 58 |
| ${ }_{\text {Paona }}$ Ahmednagar | ... | 12 | 34 | 17 | 24 | 87 |
|  | ... | 33 | 74 | 76. | 42 | 225 |
| SholápurSátara | ... | 7 | 79 | 6 | 4 | 96 |
|  | ... | 27 | 46 | 18 | 24 | 115 |
| Total |  | 97 | 249 | 146 | 126 | 618 |
| Northern Division. |  |  |  |  |  |  |
| AhmadabadKaira ${ }^{\text {a }}$, |  | 16 | $\cdots$ | 18 | 1 | 35 |
|  |  | 1 | ... | 18 | 1 | 20 |
| Total |  | 17 | ... | 36 | 2 | 55 |

## SUPERINTENDENTS OF Land records and agricolture.

22. The extended term of three years for which theso appointmonts more sanctioned in Government Resolution No. 5914, dated 10th August 1897, crpirel in September 1899, and proposals for their further retention havo been put before Government. The scheme referred to in the last report on the subject of training village officers in survey, which is one of the objects for which tho appointments of Superintendents were oriminally sanctioned, is still boforo Govornment. The real object, however, for which these officors aro required is that ilhey may undertake most of the duties hitherto performed by Superintendents of Survoy, including settlement work of a routine nature.
23. The extent of the tests taken by the Suporintendents in the ycar as compared with the preceding yoar isindicated in detail in the following table:-


Neither of the permanent incumbents was in charge of the ofice continuously during the year. Mr. Lushington was on plague duty for ncarly five months (December-April) and on privilego leave for threo months (5th May to 4th August). In his absence the charge of the office was held by Ráo Bahádur Ichharám Bhagvandás, Personal Assistant to the Director, and Mr. J. W. Whitcombe, Assistant Superintendent, Mraritha States Survey. Mr. W. D. Wilkins, Assistant Superintendent, Konkan Survey, who was appointed to act as Superintendent Land Records and Agriculturo, C. D., during the deputation of Mr. Young to the Deccan survey, took chargo from Ráo Bahídur Ichhárám Bhagrandás on 5th November, and held it till 10th A pril, when he proceeded on leave on medical certificate, and since then Ráo Bahádur Ichhárím has been in charge. Mr. Ichháram held joint charge of the offices of the Superintendents, Land Records and Agriculture, C. D. and S. D., for a fortnight in April. The complete boundary-mark inspection work was not tested in cither division. In the Southern Division the Superintendent was in Maroh engaged on general settlement enquiries in the Dápoli táluka, and on cnquirics in connection with the classification record in the Khed taluka of the Jatndigiri district. In April and May the Superintendent travelled in the Belgaum and Dhárwár districts, in which, as also in Bijípur, tho complete bound-ary-mark inspection work was stopped owing to the cmployment of Circlo Inspectors on plague duty or on special measurement work. The Superintendent took a test of this measurement work. In the Central Division tho ill-hcalth of Mr. Wilkins prevented him from taking test of this work. The Superintendent, C. D., having also charge of the, Superintendent S. D.'s offico, spent the month of April in Belgaum. The month of May was devotcd to the examination of the district survey office at Sátúra, and to the supervision of

в 2190 -4
the preparation of certain statements at the district survey office, Poona, in connection with the introduction of the second revision survey rates into the Indápur táluka of the Poona district. The test of crop inspection work compares favourably with that of last year in the Southern Division, and in the Central Division the deficiency in the quantity of test was made up by the examination of the work of a greater number of Circle Inspectors. The employment of the montlis of March to May in the manner specified above accounts for the decrease in the figures in the last three columns. Care was taken to visit the districts which were not visited last year, and in the Southern Division Kínara alone remained without inspection for two successive years. While in the Ratnagiri district the Superintendent, S. D., took test of the measurement of Pardi lands, on which nine Circle Inspectors had been employed since November 1898. The District Inspectors and district survey office were thoroughly examined in three districts in the Southern Division and in five in the Central Division. The field work of two District Inspectors of Belgaum and Bijápur was also tested. In the Central Division Mr. Wilkins examined the Assistant District Inspector of Khandesh in measurement work and found him competent to take test of Circle Inapectors' work without the help of the General Duty Inspector. In the inspection tour both the Superintendents paid attention to the test of entries in the circle books.

Along with the scrutiny of the work of the Land Record Establishments, the village and taluka statistical forms were examined. The results of this examination were, as usual, communicated to the Collectors concerned with the remarks of the Director for such action as the Collectors considered necessary.
24. The remarks of the Superintendent, C. D., regarding the inspection work may be summarized thus:-The Circle Inspectors' work was found satisfactory with the exception of crop inspection in two or three villages in two districts and boundary-mark inspection in two villages in one district. Judging from the small extent of test, the village officers' crop and boundary-mark inspection work was found fair in two districts. In the other three districts the percentage of villages in which the work was found unsatisfactory ranged between 36 and 70. The census test was generally fair except in Khándesh. The táluka officers appeared to exercise little or no supervision over the compilation of the táluka statistical forms, especially the price register, and tardiness in the disposal of encroachment cases reported by Circle Inspectors was also remarkable. Mr. Rede, District Inspector of Násik, has been doing his work with much zeal and interest. Mr. Padhye and Mr. Kirane, District - Inspectors of Poona and Sátára, showed great energy and ability in supervising the work of Circle Inspectors. In. Sholápur and Khándesh Mr. Gadre and Mr. Athavle worked with diligence. Mr. Gadgil's work in Ahmednagar was not examined during the year. With regard to the price register, the recent revision of the form and the provision made for its punctual preparation will tend to effect considerable improvement in future.
25. The Deputy Superintendent, Gujarát Survey, supervised the working of the Central Record Office at Broach, but owing to pressure of regular survey work he could not take test of the Circle Inspectors' work in Abmadabad and Kaira.

## REVISION SETTLEMENTS.

26. In the touring season the Superintendent, S. D., made local inquiries in connection with the revision survey proposals for the Dápoli taluka of the Ratnágiri district. In the Central Division the revised rates sanctioned by Government for the Indápur táluka were introduced before the close of the revenue year. Temporary establishment at a cost of Rs. 400 was sanctioned for preparing the akarbands, and. great assistance was rendered by Mr. Padhye, District Inspector of Poona.

Crop Experiments.-Mr. Wilkins conducted four experiments, two in Násik and one each in Khándesh and Sholapur. In the Southern Division there was no opportunity for conducting experiments.

## SUPERIOR TEST BY SUB-DIVISIONAL OFFICERS AND MA'MLATDARS.

27. The following table shows the cxtent of the tust faken on fields or registers already tested by Circle Inspectors. Tho return is incompleto with regard to census and vital statistics for Sholípur, Dhárwár and Ahmadabad and partly for Khándesh, Ratnágiri and Kolába:-

| Dstrriot. |  |  | Sud.Ditisonal Opricers. |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Eubjoct of Test. |  |  |  |  |  |  |  |
|  |  |  | $\begin{aligned} & \text { Crop. } \\ & \text { Reord. } \end{aligned}$ | $\begin{aligned} & \text { Bourd. } \\ & \text { Marys. } \end{aligned}$ | Village consu. | $\begin{gathered} \text { Sitatiol } \\ \text { titite. } \end{gathered}$ | ${ }_{\text {cosor }}^{\text {Croper }}$ | $\begin{aligned} & \text { Dound- } \\ & \text { Marfl. } \\ & \text { Marks. } \end{aligned}$ | Village Cenaus |  |
|  |  |  | Numbor of Survos |  | Number of Regis.ter Entrisas. |  | $\underset{\substack{\text { Number of Surcey } \\ \text { Numbera }}}{ }$ |  | Namber of Rugirtor Entries. |  |
| Dharwár | $\ldots$ | ... |  |  |  |  | 10 | 33 |  |  |
| Bijápur | ... | ... | 79 | 67 | 80 | 268 | 124 | 191 | 924 | 1,693 |
| Belgaum Kanara ... | $\ldots$ | $\ldots$ | $\begin{array}{r}73 \\ 27 \\ \hline\end{array}$ | 82 27 | 315 4 | 266 | 270 256 | 269 281 | 766 198 | 440 173 |
| Ratnágiri ... | ... | $\ldots$ | 26 | 42 |  | $2{ }_{24}^{4}$ | 72 | 77 | 44 |  |
| Kolába ... | ... | ... | 22 | 40 | 34 | 41 | 60 | 83 | 38 | 52 |
| Khándesh ... | ... | ... | 735 | 913 | 941 | 1,273 | 1,087 | 1,006 | 674 | 1,493 |
| Násik ... | ... | ... | 17 | 43 |  |  | 432 | 475 | 67 | 441 |
| Ahmednagar |  | ... | 204 | 215 | 79 | 412 | 352 | 519 | 133 | 370 |
| Poona. ... | ... | ... | 104 | 120 | ... | 1,435 | 276 | 195 | 199 | 262 |
| Sholapur ... | ... | ... |  | 28 448 | 302 |  | 263 | 316 |  | 789 |
| Shatara ${ }_{\text {a }}$ Adabad | ... | ... | 487 | 4 | 302 | 24 | 995 113 | 1, ${ }_{1} 163$ | 643 | 2,883 $\cdots$ |
| Kaira | ... | $\cdots$ | , | ... | $\ldots$ | $\cdots$ | 12 | 1,163 | $\cdots$ | … |

Except in two or three districts the extent of test is not sufficiont, though it compares favourably with the last year in three or four districts.

In the Dhárwár district owing to plague duty the Sub-divisional officers could not spare time for this test. The Mámlatdárs' test was also short for the same reason. In Kaira the village officers' and Circlo Inspectors' work was tested, but the return in the prescribed form has not been supplied. Plague duty interfered with the test in Bijápur and Kolába. The First Assistant Collectors in Śtára, Poona and Kánara, and somo Mámlatdárs in the last two districts took no test of the Circle Inspectors' work. The Collector of Poona has warned the Mámlatdárs not to neglect this work. Remarks as to the quality of Circle Inspectors' work have been reported from four districts only.

The Collectors of Sátára and Poona took personal tests of the Circle Inspectors' work.
28. Extracts are given below from the remarks made by the Collectors on the working of the Inspecting Staff during the year in the administration reports or in memoranda forwarding the annual returns relating to Circle Inspectors' work :-

Dhárwár.-" The meagreness of the departmental work done by the $\Lambda$ gricultural Staff is more than compenated for by the material assistance they have rendered, along with officers of other Departments, in combating plague and checking its spread. Most of the Circle Inspectors undertook their extra duties zealoosly. Messrs. Rayadurga and Kumble both did good work during the year. The latter has devoted himself energetically to mastering his departmental dutice."
Belgaum.-"At the beginning of the fair season a number of them were engared for nearly two monthe in measuring land required for the Gokak Storage Reservoir to allow of the acquisition being completed before the end of March. As the measurement work generally had for various reasons fallen much into arrcars, a spocial
eflort was marle to bring it up to dato at the expense of the year's work of complete boundary-mark inspection. Leaving one Circle Inspector in oach táluka the (thers wer" emplqyed in completing the measureryent of lands required for the Kagwád-Athani, Kudehi-Tcrdal, Yargatti-IIatkol and Nipáni-Mabálingpur roads, and in mensuring the disforested areas in Parasgad taluka. The work of substituting stones in place of earthen mounds in survey numbers usually flooded by the Krishna was satisfactorily carried out in the village of Darur. The District Agricultural Inspector still considers the work of his staff unsatisfuclory with one or two exceptions. The tendency to select small numbers for test is as noticcable as ever. The village officers are very unpunctual with their returns, and inrpection of this reacts on the efficiency of the Circle Inspectors."
Kdnara.-"The Circlo Inspectors' staff is not very efficient. The appointments are unpopular. There is not a sufficiént proportion of trained survey men on the survey staff. I am arranging to obtain in a few monthe some men from the Deccan Survey who are thrown out of employment on the completion of the survey work. Some of the Circlo Inspectore did useful plague work, and their appointment on that duty saved the impoverished Local Board of lot of money. The District Inspector, Mr. Shesho Shrinivas, was on plague work for some months, and his excellent service has been reported in my plague report. Throughout the year his work has been satisfactory."
Kolába.-"The staff is only introduced as yet into part of the district. The District Inspector was employed on plague duty during the year 1897-98. The present was, therefore, the first year in which all the staff with an experienced District Inspector were engaged on their legitimate duties. The Collector thinks that this fact should be taken into consideration in reference to the work of the Circle Inspectors, which certainly was neither accurate nor energetically performed. After the instruction given by Mr. Torvi, however, an improvement next year may be expected."
Khándesh.-" In every instance where these duties were not fully carried out, the cause was deputation to special work. The work done by the Circle Inspectors was good on the whole, and was satisfactorily supervised by the District Inspector and his Assistant. Circle books have been introduced wherever the revision settlement rates have come into force."

Ahmednagar.-"There appears to be barely'sufficient check over the work of Circle Inspectors, but they have little opportunity of evading altogether the performance of their duties, as their time is so strictly regulated by rules. During the carrent year most of the Circle Inspectors were employed on their legitimate duty as preseribed in the Circle Inspector's Rales except a few from the several talukas who were engaged for a period of a month and a half in measuring land occupied by roads, quarries and metal stacks, owing to the famine and in performing some field and office work in connection with bringing under settlement the three Vinchurkar villages lastly resumed in the Kopargaon táluka. During the year four Circle Inspectors were fined, three for negligence in crop inspection and one for not having rejoined his post at the expiry of his leave."
Poona.-"The conduct of Circle Inspectors has on the whole been good. Four were warned for petty neglect of duty and one, who persistently refused to submit bis diaries and whose work was generally bad, was punished by a fine of Rs. 10, and a stoppage of pas of Rs. 5 per mensem until such time as his work is reported to be again satisfactory. The general outturn of field work has been satisfactory and the reduction of arrears of measurement and miscellaneous work is very creditable to Mr. Padhye's supervision. The preparation of Indápur talluka settlement papers added very considerably to Mr. Padhye's duties and imposed for a time a heavy strain on the district aurvey office establishment. Mr. Padhye has continued to work throughout the year with his accustomed zeal and energy and has fully maintained his reputation as a thoroughly efficient District Inspector.'

Sholapar.-"The District Inspector and most of his staff continued to do good work during the year.'

Satára.-"The district survey office was visited and examined by the Superintendent, Land Records and Agriculture, C. D., in the month of May last. The survey records have been all carefully arranged, and the correction work has been nearly up to date. As regards the work done by Circle Inspectors, I can only repeat what I said last year. Much of it seems to me waste of labour. They inspect the work of village officers and detect mistakes, but they do little or nothing towards effecting any rermanent inprovement in the work of these officers. They compile multitudinous statistics, which are of course not withoat their uses, but the bulk of which seems to me to be out of proportion with its practical usefulness. As surveyors they are not as reliable as one could wish. For instance last year, when a piece of careful surveying had to be done in connection with the Yenna Lake at Mahábaleshvar, it was necessary to call in the
aid of Assistant Settlement OMicer, Mr. MacIver, the Circle Inspector, having been found incapable of doing what was wanted."
Ahmadabad.-"The work of the Circle Inspectors so far as it relates to the inspection of boundary-marks mppeared to mo to havo been satisfactorily done. I have, however, several times noticed inordinate delay on the part of these omeere in disposing of tho correspondences referred to them ly the Mámlatdars. But they themselves wore not to blamo in most cases, as several correspondences were referred to them which ought to have been referred to the Talatis or General Duty Karkuns. Such correspondences were therefore withdrawn from them and referred to the oflicers whose duty it was to dispose of them. The whole work appears to be too irksome to some of the Inspectors and they are therefore most anxious to return to their original appointments. The circle books were filled in with tolerable care, and the few clorical mistakes that were noticed at the time of inspection were pointed out to the Inepectors and com-
municated to the Mámlatdárs concerned."
Kaira.-"The ordinary work of the District Inspector and of the Circle Inspectors was satisfactory, and they gave valuable help in plagae operations."

## CIIAPTER III.

## UTILISATION OF LAND RECORDS.

## PROGRESS IN THE COMPILATION OF THE CIRCLE BOOKS.

29. The usual table is appended, showing the progress made up to and including the season of 1898 . It includes only the villages for which tho compilation is complete:-

| District. |  | $\cdot \begin{gathered} \\ \text { Total num- } \\ \text { bor of } \\ \text { Govern- } \\ \text { ment } \\ \text { vil'ages. } \\ \\ \\ \end{gathered}$ | Tutal num ber of villages for whioh books are to be opened. | Numbbr of Vilhuald in whict Cinola Dook compiled binch the feab of tab |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Introduction of Circlo Bookn. |  |  | Iutroduction of the current ecttement. |  |  |
|  |  |  |  | Rough books. | Village соріев, | Táluka copics. | Rough bouke | Village copies. | Tiluka copies. |
| Dhárwár ... |  | 1,289 | 1,263 | 622 | 622 | 822 | 1,060 | 1,00t | 971 |
| Bijápur ... | . | 1,011 | 1,011 | 28.4 | 148 | 148 | 908 | 447 | 193 |
| Belgaum ... |  | 913 | 913 | 204 | 204 | 204 | 910 | 910 | 010 |
| Kanara .. | .. | 1,416 | 1,408 | 1,192 | 512 | 419 | 700 | 600 | C00 |
| Ratnágiri | $\cdots$ | 1,270 | 63 | 9 | 9 | 9 | 69 | 60 | 63 |
| Kolába ... | ... | 914 | 914 | 683 | . | ... | 386 | $\ldots$ |  |
| Khándesh ... |  | 3,224 | 1,978 | 1,630 | 1,630 | 1,630 | 1,243 | 1,243 | 1,243 |
| Násik ' ... |  | 1,536 | 1,04.3 | 1,033 | 947 | 910 | 233 | 233 | 233 |
| Ahmednagar | ... | 1,226 | 1,151 | 781 | 784 | 784 | 1,151 | 1,151 | 1,151 |
| Poona ... |  | 1,002 | 1,002 | 80 | 80 |  | 776 | 553 | 346 |
| Sholápur ... |  | 665 | 665 | 98 | 98 | 96 | 235 | 235 | 238 |
| Sátára ... |  | 962 | 962 | 915 | 897 | 907 | 221 | 221 | 221 |
| Ahmadabad | ... | 832 | 446 | 323 | 320 | 326 | 372 | 414 | 441 |
| Euira |  | 563 | 525 | 311 | 233 | 226 | 525 | 225 | 525. |

As regards the current entries, the progress is satisfactory in Khándesh, Ahmednagar, Sítára and Abmadabad; fair in Dhárwár, Belgaum, Kánara, Ratnágiri and Násik; and unsatisfactory in Kulába, Poona, Sholápur and Kaira. The compilation for back years is nearly complete except in threo districts. The Collector of Sholfapur has issued instructions for completing the corpilation before the expiry of the current settlements. Emplogment of Circlo In. spectors on plague duty interfered with the compilation work in Dhárwár, Bijápur, Belgaum, Kaira and Sátára. During the year tho standard of daily work as regards the circle book compilation was prescribod, and if steps are taken to ensure that this standard is acted up to, much improvement will bo noticeable. The following irregularities found in some districts deserve special notice:-(1) Fair books were written up direct without entrics havine been made in the first instance in the rough books; (2) fair books wero filled in before the entries in the rough books had been examined and initialed by tho

Mámlatdárs ; (3) filling up of fair copies of the circle books was not commenced at all, or was much in arrears; (4) in one táluka office the táluka copies of the circle book were mislaid, and the writing up of the books had to be postponed. Delay on the part of Mámlatdárs in checking the entries in the rough books was to a certain extent responsible for the irregularities Nos. 2 and 3. The non-examination prevented the village copies from being sent to the villages where they are intended for the inspecting officers to examine and make remarks. The attention of Mámlatdárs should be drawn to the necessity of prompt examination of the rough books. The compilation should also be so arranged that the entries as far as filled in the rough books may after examina. tion by the Mámlatdars be transferred to the fair books in the same year. . As the circle books are intended to 'supply data for future settlements it' is essential that special care should be taken for the preservation of the taluka copies.

The District Inspectors and Superintendents, Land Records and Agriculture, C.D. and S. D., took tests of. the Circle Books compilation. Reports regarding the test by sub-divisional officers have been received for two districts only.
30. Detailed remarks on the progress of the circle book compilation in the several districts are made below:-

Dharroar.-Compilation work up to date in five tálukas; in the six other tálukas current entries for one to three years in arrears owing to the employment of Circle Inspectors on plague duty. Back entries in arrear in two tálukas only.
Bijápur.-Progress slow: As regards current entries, rough books have been brought up to date in two tálukas only. In others one to three years' eutries are in arrears. Back entries have been written up to date in all the talukas except one. Fair books are much in arrear, for 'which delay on the part of. Mámlatdárs in examining the rough books and, initialing the entries seems to be principally responsible. In two .talukas empioyment of Circle Inspectors on plague duty interfered with the compilation work.
Belgaum.-Current work up to date in two tálukas. In others one to two years' entries in arrears. The compilation was wholly suspended in the talukas of Belgaum and Gokak owing to the employment of Circle Inspectors, on plagae duty, and on measuring the land taken up for the Gokak Storage Reservoir. Eutries for one year for more than half the number of the villages in Chikodi remained in arrear for the same reason. The Collector rightly remarks that the Mámlatdárs have failed to realise the necessity and advantage of keeping this work up to date. The compilation for back years has been completed.

Kànara.-Current entries are filled in to date in two tálukas. In otbers rough books are nearly up to date except in Sirsi, and the compilation of fair books shows good progress in three talukas. Owing to the recent introduction of the revision survey no compilation is due for back years in two tálukas In others it is nearly up to date except in Sirsi. In Siddápur, Haliyal and Yellápur; employment of Circle Inspectors on plague duty accounts for the short work. In the last táluka rough entries remained to be initialed by the Mámlatdar No explanation is given as to the short work in Kárwár and Sirsi. Steps have, however, since been taken to bring the compilation to date in the latter táluka, for which revision survey proposals are under preparation.
Ratnágiri.-Progress satisfactory. The compilation is up to date in Vengurla, and in Malvan one year's entries are in arrears, owing to the taluka papers having been sent to the Huzu'r for audit purposes. The Collector thinks that with a listle more effort Málvan could have brought the books up to date as Vengurla has done.
Kolába.-Progress unsatisfactory. The compilation of rough books only has been made. It is up to date in two talukas only and in the other two, entries for three or four jears are wanting. Fair books not commenced at all, for which the very slow progress made by the Mámlatdárs in checking the entries in the rough books and in initialing them is perhaps responsible. The attention of the taluka officers should be drawn to the necessity of promptly checking the entries in rough circle books.
Khándesh.--Progress satisfactory. The current compilation work is up to date in all the tálukas except two. In Chopda one year's entries only are in arrears and in Erandol the work done in September-October was short owing to the illness of the Mámlatdár and the absence of one of the Circle Inspectors. The compilation for back years, which, owing to the recent introduction of the survey settlements is small, is up to date.

Nasik.-The compilation is. up to date in two tálukas. In others the current entrics have been nearly brought up to date, but the progress made as rocgards tho back years is ansatisfuctory, except in the táluka of Pejut, where one ycar's entries ouly remained in arrear owing to the taluka papers having been sent to the Muzir office for audit purposes, and in 45 villages of Nandgion, in which owing to thu recent introduction of the revision settlement no conpilation was due. Entries for 2 to 19 years are in arrears. In Sinnar one Inspector attended tho Survey Class at Násik and another Inspector was untruined. Owing to the táluka papers baring been sent to the Huzúr office for audit the Circle Inspectors in Peint were engaged for $1 \frac{1}{4}$ months in arranging the taluka records, and one Inspector assisted the Circle Inspectors of Násik in the compilntion work. In ovo taluka (Dindori) it was noticed that the work was not compiled uniformly for tho, same number of villages.
Almednagar.-The progress was satisfactory in seven talukas whero tho books are com-
$\because$ piled to date. In the remaining tálukas current entries only aro in arrears for ono

- to three years. - Detailed statements have not been received for this district.

Poona.-The progress is very slow except in Indápur and Mával. No return has been sent by the Mámlatdar of Haveli in spite of repeated reminders from the District Inspector. Current entries remain to be made for one to four ycars and in some villages for ten. As regards back entries the compilation of rough books only shows fair progress. Fair books were not written up at all in two talukas, and in some talukas fair books were filled in before the entries in the rough books were checked and initialed by the Márnlatdárs, who are much behindhand in this respect. The compilation is reported to have been carelessly done in three talukas, especially Junnar.
Sholápúr.-Progress slow. In Madha, Pandharpur aud Sánęola entries for two or threo years are in arcars, in Málsiras for siz yeare and in tho remaining two for nine to twelve years. Verg little compilation work was done during the yurr (SeptemberOctober 1898) except in. Mádha. The Circle Inspectors in Karuala were employod on supervising the distribution of dole, and two Inspectors from each of the Pandharpur, Śngola and Malsiras talakas were sent to Madha to help in compicting the arrear compilation for that taluka, in which the curroat' settlement expires in 1899-1900: The compilation was brought down to $\mathbf{1 8 9 5}-30$, aid the Collectar reports that it will be completed daring the current year. Ho further obscrves that special assistance will be given so as to complete the circle books iut 'Sholípur, Bársi and Karmála before the expiry of the current settlements in those talukas. Two Inspectors from Sholápur were engaged in eliminating redundant boundary marks from the copies of the village maps in the taluka office. In the Sholípur táluka the village copies of the circle bdok do not seem to have been hithorto filled in, which is irregular.

- Sátára.-Progress satisfactory. The compilation is up to date, except that one year's entries remained in arrear in Koregaon and for a few villages in two othor talukas. Two Circle Inspectors in Koregaon were employed on plague duty and one of the Circle Inspectors in Pátan was on leave. The táluka copies of the circlo book for the villages in one of the circles could not be found in time, and. consequently the compilation for one year had to be postponed. As the books are to bo retained for 30 years, special care must be taken to preserve them. Entrics for two ycars in two circles also remained to be initialed by the Mámlatdár.
Ahmadabad.-Progress satisfactory. The compilation has been brought up to date in all the taluka except two. In one, entries for one gear are in arrears as regards both rough and fair books and in the other for fair books only. In some tílukas entries for one to two years were made in the fair books before examination by the Mámlatdár of the rough books, and in one táluka the figures seem to have been entered direct in the fair books and no rough books kept. This is irregular. The attention should be drawn to the necessity of prompt check of the entries in the rough books.
Kaira.-No compilation work was done during the year in the tálukns of Mehmadabal and Matar, and the progress in Nadiad and Thásra was slow. No erplanation is given for the non-compilation or short work. In the remaining tallukas tho work is up to date.
COLLECTION OF REVENUE AND RENTAI IN PRECARIOUS TRACTS.

31. The following table compares the measures adopted in 1505-90. with those in the preceding year:-

| District. |  | Number of notices served. |  | Number of cases in which penalty was levied. |  | Number of casce of distraints of moveable property. |  | Number of cases of forfeiture of occupancies, |  | Remarkg. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 1897-98. | 1898.99. | 1897-98. | 1898-99. | 1897-08. | 1898-99. | 1897-93. | 1808.09. |  |
| Khándesh | ... | 15,650 | 13,711 | 38 | 99 | 146 | 30 | 134 | 306 |  |
| Násik ... | ... | 9,425 | 9,647 | 9 | 73 | 43 | 34 | 145 | 175 |  |
| Ahmednagar | ... | 27,908 | 23,053 | 3 | 21 | 160 | 584 | 4 | 262 |  |
| Poona ... | ... | 35,374 | 29,681 | 4 | 3 | 10 | 74 | ... | 1 |  |
| Sátára ... | ... | 19,146 | 21,341 | ... | 9 | 5 | 1,483 |  | 11 |  |
| Sholápur... | $\cdots$ | 13,993 | 9,111 | 2 | 2 | 19 | 214 | 3 | 13 |  |
| Belgaum... | ... | 894 | 1,153 | 2 | 4 | 2 | 3 | 1 | 1 |  |
| Bijápur ... | ... | 8,917 | 12,969 | 2 | 14 | 99 | 304 |  | 860 | , |
| Dhárwár ... | ... | 2,312 | 2,982 | 3 | 4 | 4 | 17 | 11 | 23 |  |
| Kolába ... | ... | 10,288 | 9,901 | 21 | 19 | 35 | 62 | 4 | 8 |  |
| Ratnágiri | ... | 2,840 | 2,558 | 61 | 58 | 223 | 204 | ... | 9 |  |

The number of notices fell considerably except in the five districts of Nasik, Dhárwár, Sátíra, Belgaum and Bijápur. The last three districts also showed considerable increase last year. On the other hand, the number of cases in which penalty was levied more than doubled, the cases of distraints of moveable property more than quadrupled, and the number of cases of forfeiture of ocecupancies increased by about five times. For the large increase under cases of distraints of moveable property, Sátára is responsible. In the Karád táluka of the district there was marked disinclination on the part of rayats to pay their dues; and in 1,200 cases moveable property had to be distrained.

## CHAPTER IV.

SCIENTIFIC AND NATIONAL ENQUIRY UNDER IMPERIAL CONTROL.

## A.-METEOROLOGY.

32. The number of rain-gauge stations in the whole of the Presidency (including Native States) reporting rainfall information to this office were 325, the same as last year. Three stations were temporarily closed, as the medical officers in charge of the gauges were called away on plague duty. A separate report on rain-gauge inspection and rainfall registration is submitted under Government Resolution No. 4523, dated 1st December 1894, General Department.
33. The detailed analysis of the rainfall of the scason of 1898 will be found in the appended tables (pages i-xiii). The fall of the year is contrasted with the average fall and the fall of the preceding year in the statement below :-

Rainfall at District Head-quarters.

| No. | District IIcad.quarters. |  |  | ansual rainfall ending 316t Dectiber. |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | $\begin{gathered} \text { Average } \\ \text { of eleren } \\ \text { years } \\ \text { ending } \\ 1897 . \end{gathered}$ | 1897. |  | 1898. |  |
|  |  |  | Fall. | Rainy days. | Fall. | Rainy daya. |
| $\begin{aligned} & 1 \\ & 2 \\ & 3 \\ & 4 \\ & 0 \\ & 0 \end{aligned}$ | 号 | $\left\{\begin{array}{l}\text { Dhulia (Khándesh) } \\ \text { Násik ... } \\ \text { Ahmednagar } \\ \text { Poon } \\ \text { Poona } \ldots \\ \text { Sholápur } \\ \text { Sátára ... }\end{array}\right.$ |  |  | Inches. | Inches. | No. | Inches. | No. |
|  |  |  |  | 26.22 |  | 34 | 21.03 | 36 |
|  |  |  |  | $30 \cdot 06$ | 28.46 | 44 | 27.59 | 51 |
|  |  |  |  | 23.68 | 18.23 | 30 | 14.78 | 31 |
|  |  |  |  | 35.10 | 37.18 | 50 | 22.92 | 52 |
|  |  |  |  | 25.58 | 20.42 | 37 | 31.85 | 40 |
|  |  |  | ... | $44 \cdot 63$ | $46 \cdot 61$ | 72 | $35 \cdot 97$ | 78 |



The monsoon of 1808 broke timely on the Kinara const, but the current being weak advanced slowly into Khíndesh, Gujarát and beyond tho Sahyídris and soon spent itself. In these parts thorefore thore was a broak in the second half of June and sowings were checked. They wero rosumed and completed in July. There was sulicient and seasonable rainfall in Gujarit and on tho littoral in July and August. But in the eastern parts of the Deccan and the Karnátak, the kharif crops were severely tried by deficiencies of rain and towards the eud of the latter month they began to fade. But copious rain fell everywhere in September and gave tinely relief. The Octolicr rain was up to the requirements of the different parts of the Prosidency, heavy in the oastern rabi tracts of the Doccan and the Karnátak and light in the Konkan and on the Gháts. None fell in Khándosh and Gujarat, whore the season closed rather early. The rabi crops felt some insufficioncy of moisture. The Eart Duccan and the Karnátak had a fall of cyclonic rain in November, as well as in Decomber, which benefited the rabi crops.

Deccan.-The monsoon of 1808 set in timely with Mrig in June, but a break following immediately, the sowing operations were checked excopt in tho western hilly tracts. They were completed in July. In parts of Almoelluagar, Sholipur, the Deshi portion of Sitára and Poona, the full kharif aroa was not sown. Sown crops also suffered from deficient rain in Nugust. September rain was most opportune and heavy enough every where to sustain tho withering kharif crops. It also produced sufficient moisture for rabi sowing, which was favourably effected in tho subsequent break. The rainfall in October and November was rather insufficient. The late rains closed rather too carly for the rabi crops, which somewhat reduced their outturn.

Karnatal.-Tho ante-monsoon showers were heavy enough for preparing land and early sowings. The monsoon of 1808 opened carly in Junc, and in the western (JLallid) portion it gavo good rain for all agricultural operations till the end of August. But in Bijipur and eastern tálukas of the other two districts the monsoon current grew weaker in the second fortnight of Jung and gave only occasional showers. This checked sowings. Somo kharif area remained unsown until utilised for the rabi. The sown crops in these parts suffered from repeated deficiencies in July and August. $\Lambda^{t}$ the end of tho latter month they were fading; but heary rain in September gave timely relief. Rabi sowings wero started during the intervening breaks. There was another seasonable good fall in October and a subsequent break was useful for completing rabi sowings. The Vishákha showers in November were benoficial to tho

в $2190-6$
sown rabi. No rain fell afterwards. Rats appeared in places in Dhárwar, but no serious or widespread injury was done.

Konkan.-The monsoon of 1898 commenced in the first week of June in Kanara and in the second week in the other districts. Kharif sowings were completed in June. Rain fell almost daily in Juiy, sufficient and favourable for transplantation. The August rainfall was light in the second half of the month, but it was seasonable and sufficient for weeding operations. The Purva and Uttara falls in September were hoavy; but the break towards the close of the month prevented damage. October rain was much below the average, but immediately following the heavy fall of September it ras not insufficient. The break was utilised for harvesting kharif crops. The fall of November was slightly injurious in places to rice ready for reaping or already reaped. No rain fell subsequently except a few scattered showers in December in Kínara and Kolaba.

Gujarat.-The rainy season of 1898 commenced in the middle of June and closed before the end of September. The kharif sowings were begun in June, but a break occurring at the end of that month they were completed in July. The rainfall in this month was too heavy for bajri and cotton in Broach, where resowing of cotton was necessary. August rain was sufficient to keep standing crops in fairly good condition. Most of the rabi rains fell in September and the sowings of the winter crops were completed in October. No rain fell afterwards. The late rains ceased very early.

## Forecast of the season of 1899-1900.

34. The forecast of the season of $1899-1900$ is that of widespread scarcity. The season opened with mild monsoonish weather, and the current being weak the rain in June was everywhere light and in the latter half of the month ceased altogether in the Deshi tracts of the Deccan and the Karnatak. During the remainder of the kharif season the rain was light and quite insufficient for the crops on the littoral, while in the whole of the North Deccan and Gujarat (especially North Gujarát) and in the eastern tracts of the Deccan and the Karnátak the rain was scanty or wholly absent up to September. In the eastern parts of the Deccan and the Karnátak heavy rain in September revived the withering crops and induced rabi sowing. But in the North Deccan and Gujarát the kharif crops failed altogether unless irrigated, and all agricultural operations were at a standstill. The cattle there began to suffer. October rain fell in light showers and was confined to Kánara and Ratnágiri, the South Deccan and the Karnátak. The North Deccan and Gujarát again received no rain, and rabi sowings were altogether stopped; elsewhere in the Presidency the rabi crops sown with the September rain have suffered for want of further rain and are expected to yield a poor outturn.

## B.-MINERAL STATISTICS.

35. The annual return of mines and minerals was, as usual, forwarded to the Reporter on Economic Products, Calcutta, and the return of mineral concessions was submitted to Government for transnission to the Government of India. In addition to these, the two half-yearly returns showing particulars of mines being worked were supplied to the Director of the Geological Survey. This information has also been supplied for the first time to the Compiler of the General Administration Report, Bombay.

Additional information regarding certain mineral industries for which trustworthy statistics are not supported by actual returns was supplied to the Reporter as last year.

Under instructions conveyed in Government Resolution No. 6602, dated 21st September 1899, Revenue Department, the annual statements (Nos. I and II) of the production of minerals and gems will in future be forwarded to the Director General of Statistics instead of to the Reporter on Economic Products. Mr. E. D. Payer of Secunderabad (Civil Engineer, Hydtrabad State Railway), has been granted a license, in addition to the one reported last year, to explore for minerals in the Gadag taluka of the Dhárwár District (Government Resolution No. 6877, dated 30̣th September 1899, Revenue Department).

The lease to mine for gold in the villages of Alnawar and Kadalgiri, Dhairwár District, granted to the Syndicate to whom Háji Ismail ralad Líjii Mahomed was allowed to assign his rights and privileges, has, under Government Resolution No. 5840, dated 22nd August 1809, Revenue Department, been extended for a period of two years on the condition that the $\Lambda$ ssuciation makes substantial progress before Miarch next.

## C.-COLLECTIONS FOR THE IMPERIAL INSTITUTE AND TIIE <br> INDIAN MUSEUM.

36. The following articles were formarded to the Reportcr on Economic Products to the Government of India:-
(1) Abies Webbiana, Fer. Talispatra (leaves).
(2) Agaricus igniarius, Ver. Gharikun (sap).
(3) Alhagi maurorum, Ver. Taranjbin (manna).
(4) Alpinia officinarum, Ver. Pankijir (root stocks).
(5) Astragalus verus, Fer. Katiragond (gum).
(6) Carum nigrum, Ver. Shahajire (fruits).
(7) Centipeda orbicularis, Ver. Shinini (leaves).
(8) Cocos nucifera, cocoanut (gum).

The Reporter paid a visit to Karrichi, Ahmadabad, Surat, Bombay and Poona in September-October last in connection with the collection of commercial products for the Indian Museum.

## D.-ENTOMOLOGY.

37. Locusts appeared in several tálukas of Karíchi, Ifyderabad and Thar and Párkar during the months of May and June last, but no damage was dono by them.

At pages 138 and 139 of Volume IV, No. 3, of the Indian Musoum Notes, a mixture of arsenic and soda has been recommended for the destruction of locusts. Great caution is necessary in its preparation and use on account of its poisonous character.

The Imperial Bacteriologist has obtained from South Africa a culture of the fungus which is said to have been found very effective in destroying swarms of locusts in that country. Small tubes containing tho fungus are prepared at his laboratory and supplied on receipt of a telegram reporting tho presence of locusts in any district. Instructions for using and cultivating the fungus have been published. The Imperial Bacteriologist is of opinion that tho fungus is worth trying in the case of grasshoppers also.

> E:-VETERINARY.

## Organization of a Subordinate Civil Veterinary, Staf.

38. A salutri class has been started at the Bombay Veterinary College from 4th January 1900 to train men eligible for holding the appointments of Subdivisional Veterinary Assistants contemplated by the scheme for the organization of a Subordinate Civil Veterinary Staff in this Presidency. Tho instruction is given in colloquial Hindustáni and Maráthi, and consists principally in practical demonstrations. The course of instruction extends over two ycars, and the class is open to both Civil and Military pupils. No feos aro charged for the instruction. Detailed rules and regulations in connection with the class have been published for general information.

As regards the other matters dealt with in the scheme, the final orders of the Government of India are yet awaited.

## Transfer of Sind.

39. The Superintendent, Civil Veterinary Department, Baluchistín and Sind, has been subordinated to the Local Government as regards his duties in connection with cattle-breeding, cattle-discase, veterinary dispensaries and horse
and mule-breeding operations by the agency of Local Board and Muncipal stallions in Sind. He submits an annual report which is reviewed by this office:

## Horse and Mule-breeding.

40. The Superintendent, Civil Veterinary Department, Bombay, travelled in twelve districts, visited Pálanpur, Rájkot, Bhívnagar, Junágad, Vankáner and Morvi, and paid seven visits to Bombay. He inspected all the grant-in-aid veterinary dispensaries and attended the horse-shows held at Ahmednagar and Rajkot. The Superintendent, Civil Veterinary Departnent, Baluchistán and Sind, visited all the dispensaries in his charge.

The number of stallions on the register at the commencement of the year in the Presidency Proper was 42, of which 4 were destroyed and 1 died. Eight stallions were added. Thus the number at the close of the year was 45 , of which 9 were Thorough-bred English, 3 Hackney and Norfolk Trotter, 31 Arab, 1 country-bred and I Australian. Nine of the stallions were located in Gujarát and the rest in the Deccan. The actual number of stallions at stud-work during the year was $41 \cdot 39$ against $44 \cdot 79$ during the preceding year.

The total number of mares covered was 1,466 against 1,105 during the preceding year, the rise being chiefly noticeable in the Deccan, which suffered from the effects, of famine during the preceding year. The average number of mares covered per stallion rose from 24.67 to $35 \cdot 42$.

The average number of produce per stallion declined from 10.89 to 8.62 , but the percentage of produce to the number of mares covered per stallion showed a slight improvement, being $34^{\prime} 93$ against $34^{\prime 2}$. The percentage of "not held" showed an increase ( $52 \cdot 94$ against 51.54 ) and that of unknown results a decrease ( $12 \cdot 13$ against $14 \cdot 17$ ). It is hoped that the introduction of the forms for the registration of mares and their produce will effect greater accuraoy in the statistics in future.

As regards the relative merits of the different classes of stallions as foal-getters, judging from the average percentage of known produce to mares covered per stallion for the six years ending the year under report, the countrybred horse ranks first, the Arab pony second and Arab horse third, closely followed by the Thorough-bred English, while the Norfolk Trotter and the country-bred pony occupy the lowest rank. It has been decided in consultation with the Inspector-General, Civil Veterinary Department, that the Norfolk 'I'rotter class of stallions should no longer be allotted to this Presidency as being unsuited to the class of mares obtainable here.

As regards supplying British Cavalry remounts, the average percentage of allotments of the remounts inspected at the Ahmednagar remount Rearing Depôt for the six years ending the year under report showed that the Norfolk Trotter holds the first rank, followed by the Thorough-bred English and the Arab.

Of the 152 country.bred remounts purchased, 45 per cent. were the known produce of Government stallions, 21 per cent. were the produce of country sires and the breed of the rest was not known.

The number of colts castrated was 53 against 87 during the preceding year, inclusive of Sind.

613 mares were branded for hnrse and pony breeding in the provinces of Deccan and Gujarát as against 276 during the preceding year, showing a satisfactory increase.

- Of the 35 officers empowered to grant certificates to mares for service by Government stallions, only 6 exeroised their powers and issued 90 certificates. As the number of branded mares in every breeding district has reached, and in some cascs excecded, the limit fixed under the rules of an average of 50 mares per stallion, the system has been discontinued.

The arerage cost of maintenance (exclusive of transit charges) per horso and pony stallion was Res. 385 against Rs. 559 during the preceding year. The total cost of the Department amounted to Rs. 47,261 against Rs. $51,41 \%$.

The Arab stallion Maxim, maintained by the Hyderabad District Local Board; coverel 42 mares, Of the 63 mares covered by him during the preceding year

24 foaled．The donkey stallion kept by the samo Board being suall，and an indifferent coverer，has been recommended to be used for covering donkey mares only．In Káthiáwár horse－breeding is making satisfactory progress and mule－ breeding has taken a firm footing．

## Cattle－breeding．

41．A stud bull has been kept by the District Local Board，Ilyderabad， but no information about his work was received during the yoar under report．

## Horse Shows．

42．Two shows were held in the Presidency propor－ono at Ahmodnagar and the other at Rajkot．

The Ahmednagar Show．－Held on 31st October 1808．The total number of exhibits amounted to 488 ，much below the usual number owing to a rumour that the show would not be held．The animals admitted wero，however，of a far superior class．Twelve animals were purchased for tho nurscry and wero considered by the Remount Agent to be the best ever obtaincd．With very few exceptions all foaling and covering certificates wero produced．Rs．2，200 wero distributed in prizes．

The Rajkot Shovo－Held on 29th Novomber 1898．The total number of exhibits amounted to 449．A good number of brood mares and promising fillies were exhibited．There was an increase in tho exhibits of private owners； mules were exhibited for the first time，and the institution of a class for baggago ponies was successful．The Remount Agent was unablo to attend tho show， though the Government grant was specially offered in prizes for young stock to be purchased for the Remount Rearing：Depott．Rs． 2,500 were awarded in prizes．There is a consensus of opinion in favour of roverting to the former practice of holding a central show at Rajkot irrespective of any local shows that may be periodically held elsewhere in Káthiáwár，and the matter has been left to the discretion of the several Chiefs at whose expense the show is held．

Catlle－disease．
43．The following statemont shows the outbreaks of cattle－discase in tho Presidency Proper and in Sind as compared with the provious year ：－

| Year． |  | Rindebpest． |  | Anthrax． |  | Footand． Movin Disgase． |  | Plefobo． pnetico－ nis． |  | Charion Syapto－ nATIQCB． |  | Othéz <br> Disfases． |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{aligned} & \dot{8} \\ & \text { 句 } \\ & 4 \end{aligned}$ |  |  | 产宫 |  | 禺最 | $\begin{aligned} & \text { g. } \\ & \frac{y}{y} \\ & \frac{1}{4} \end{aligned}$ |  | \＄ | 景业 | $\frac{1}{3}$ |  | ¢ |  |
| Prosidenćy Proper Slind | $\cdots$ | 1,220 388 | 68.85 46.78 | 190 18 | $86 \cdot 87$ 100000 | 2.678 | 4．29 | $\cdots$ | ．．－ | 08 | 62.04 0.0 | 127 8,651 | 9870 8.69 | 4，244 | 29848 9.65 |
| Total，1808．09 ．．． | $\cdots$ | 1，648 | 6500 | 179 | 88.27 | 2，744 | 411 | $\cdots$ | ．．． | 日 | 32－04 | 8.678 | $0 \cdot 62$ | 8，2197 | 19.66 |
| Total，1897－99 ．．． |  | 7，295 | 07.23 | 39 | 11．23 | 8，990 | $3 \cdot 31$ | 6 | bu＇00 | 55 | 10000 | 1，209 | 6327 | 13，848 | 60.79 |

It is satisfactory to note a decrease in the total number of attacks as well as in the percentage of deaths．It is suspected that the statistics are still incom－ plete，as no reports about cattle－disease have been received from certain districts．

Under Government Resolution No．4699，dated Gth July 1890，Revenue Department，Collectors are also to report cases of rabies．

At the instance of the Inspector－General，Civil Veterinary Department， enquiries were made regarding warbles，but the offcers consulted reported that it was unknown in this Presidency．

## Veterinury Dispensaries．

44．Including the Veterinary Officers employed by the Ratnágiri and Kolába District Local Boards at their own expense，there were 19 Vitcrinary B $2100-7$

Assistants working in the Presidency Proper and Sind. The following statement shows satisfactory results:-

| Yeer. | Number of Vete. rinery Ants em ployed. | Total cases treated. | Pricentage on total casis theatbd. |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Cured, | Relieved. | Died. | Incurable. | Results unknown. | Under treatment at close of the year. |
| Presidency Pro- | 15 | 19,151 | 79.49 | $5 \cdot 99$ | $2 \cdot 83$ | 1.08 | 9•12 | 1.49 |
| Sind ... | 4 | 4,782 | 89.98 | 3.08 | 3.83 | -37 | $1 \cdot 11$ | 163 |
| Total 1898-99. | 19 | 23,933 | 81.61 | $5 \cdot 41$ | 3.02 | $\cdot 93$ | $7 \cdot 51$ | 1.52 |
| Total 1597-98 | 17 | 19,970 | 80.18 | $5 \cdot 41$ | $2 \cdot 18$ | $\cdot 79$ | $9 \cdot 68$ | 1.76 |

The work done by the several Veterinary Assistants was generally good, especially that done by Messrs. Bhatt, Maniar, Patel, Haji and Asudamal. The Hyderabad Dispensary building is approaching completion. It is hoped that steps will be taken at an early date to provide suitable accommodation for the Surat, Jalgaon and Belgaum Dispensaries and to find a more convenient locality for the Sbikárpur Dispensary. The services of the Veterinary Assistant at Hyderabad are being utilized in giving veterinary instruction to the students of the Agricultural Class.

## F.-ARCHEOLOGY.

45. The Collector of Broach reports that a cultivator in petha Hansot found, among other articles, two iron plates imbedded in the earth, which on being forwarded to the Royal Asiatic Society, Bombay Branch, were found to contain a grant of land to the Bráhmans of Broach dated about 540 A.D.

## G.-TRADE AND TRADE STATISTICS.

46. The Rail-borne trade registered in 1898.99 is, as shown in the following table, extracted from the annual report separately submitted :-


The total trade in the Presidency Proper improved 26.1 per cent. over the last year and $21 \cdot 5$ per cent. over the average. In Sind the improvement was still larger, being 60.4 per cent. over the previous year and 38 per cent. over the average.

The road-borne trade was, as usual, registered at six selected nákas in the Presidency Proper and at seven nakas in Sind.

## Chapter V.

## SCIENTIFIC AND LOCAL ENQUIRY UNDER PROVINCIAL CONTROL.

## A.-EXPERIMENTAL FARMS.

47. The following is a brief notice of the principal points connected with the cultural operations and the dairy farming and breeding of stock conducted on the Poona, Manjri and Surat Farms during the year under report.

## Poone Farm.

48. The season on the whole for kharif crops was favourable, although the rainfall was considerably under average. Sufficient rain fell in June and July The rainfall in August was light, that in September heavy The light rainfail early in October brought kharif sown crops to maturity. Fair weather prevailed subsequently and harvest operations were conducted under favourable conditions. a good crop of grass was produced in the Poma District and cut for hay carlicr in the season and in better condition than usual. Rabi crops wero poor except where helped by irrigation. Fodder, however, was abundant in tho district.

## Fodder Experiments.

49. Sorghums. In past years it has been abundantly proved that a certain number of the indigenous varieties of jowar have special value as fodder crops. Under favourable conditions they are capable of producing enormous weights of fodder per acre. Three exotice varieties compare favourably with indigenous varieties. Reference is invited to former Farm Reports for details. The definite conclusions which have been attained are:-
(a) That some varieties have characteristically thin stalks and much leaf growth and the fodder is, therefore, of finer quality than of varicties with thicker, coarser stalks.
(b) Varieties with specially thick stalks have usually large heads of grain, and for the production of grain are superior to varieties with thinner stalks. Good fodder varieties have generally heads of grain which take the form of a graceful drooping panicle which affords no foothold to birds. This is of course an advantage.
(c) When the production of fodder is the chief object aimed at, thick seeding within certain limits increases the outturn and improves the quality, because the plants being crowded grow tall and thin. The practice of sowing thickly is advantageous in a favourable scason in fortilo soil which is clean and otherwise in good condition. Heavy downpours of rain damage a very thick crop to a greater extent than a thin crop. A very thick crop is specially liable to rust in wet or close weather, and is unable to resist drought for any length of time.
(d) Some varieties grow to maturity far more quickly than others. Those that grow most quickly can under favourable conditions be reaped as fodder crops in full flower 7 or 8 weeks after sowing, and may then stand 8 feet or more high. The advantage of growing such varictics in a time of scarcity is obvious. Some of the early maturing varietics when cut as fodder before maturity produce from the stubble second and even third vigorous growths if the rainfall is favourable and the soil in good condition.
(e) Like other cultivable plants in India, the varictios of jowir do not all lend themselves favourably to any decided change of soil or climate. It may generally be said that if the change is considerable the variety in the first season deteriorates, but by acclimatization may recover. This. Sundhio variety of Gujarat, which is probably the best fodder varicty in cultivation, appears to thrive with a modorate rainfall undor almost any description of fairly good soil and (excepting extent of rainfall) in almost any climate. This variety owing to its successful cultivation at Government farms is now extensively cultivated in many parts of India.
( $f$ ) Of all the varieties experimentally grown at the farm, only a very few have been found specially suited for cultivation as irrigated crops
in the fair season, aud these have been obtained mostly from the Ahmednagar and Sholipur districts, where irrigated jowari crops under wells produce with liberal management crops which ripen in February-March usually.
In the year under report over 120 diffcrent varieties have been "grown. These have been grouped under two main classes-" Grain varieties" grown on the Surat Farm, "Fodder varieties " grown at the Poona Farm. Although the conclusions recorded above are definite in a general sense, yet, when the characteristics and qualities of each of the numerous varieties were separately examined, surprising differences become apparent. Mr. Mollison has taken detailed description of each variety so far as characteristics were apparent. Typical heads of grain of each variety were photographed and a record kept, from which in future years it will be seen whether there is any departure from the original type in the general appearance of the plant, the size, shape and weight of the heads of grain, the size, shape and colour of the grain, or any other characteristic which was apparent. The efforts at the farm will be to effect improvements, and this, it is hoped, will be induced (a) by acclimatization associated with careful cultivation in good soil and proper rotation; (b) by careful selection of seed, the best heads of grain from the most vigorous plants being selected specially for seed for the following year.

Sorghum Halepense.-'The conclusions reported last year regarding the utility of this handsome perennial grass are confirmed by further observation. It does not maintain the vigour of growth and vitality which it exhibited when first planted. Indigenous grasses have to some extent taken possession of the plot, and the exotic is unable to resist this inroad, though protected by numerous underground stems which ramify in all directions. The conclusions therefore are that the Sorghum Halepense in permanent pasture will rapidly disappear in the Deccan, and it is not advisable to sow it temporarily, because owing to its numerous underground stems it is difficult to clean the land properly for another crop.

Mauritius Water Grass.-This is an excellent grass for damp, even wet, situations. It thrives where no ordinary cultivated crop will grow successfully. It grows best during the monsoon, but maintains a fair degree of vigorous growth the whole year. The crop is most successfully propagated from cuttings, and applications for such havo been received and met during the year. Applicants have been advised that the grass is only recommended for special situations.

Guinea Grass.-The successful cultivation of this grass on the farms and in many parts of the Deccan, in Gujarát, Kátbiáwár and Sind is fully established. It is an excellent fodder for all kinds of farm animals, especially for milch cattle and horses. The best results are got in good free working soil with plenty of wanure and sufficient irrigation. The grass grows most luxuriantly in the monsoon when it flowers freely. At other seasons the leaf growth is fair with no great tendency to produce flowering stalks. It thrives under shade. Plantations should be replanted every third year, the old root-stocks being grubbed up and replaced by sets obtained by sub-division. We strongly recommend all stock owners to maintain a permanent plot of Guinea grass, the outturn in a year being large and certain, the crop being exceedingly hardy and not subject to any kind of disease.

In the current season with scarcity or famine imminent, a good many applications for Guinea grass sets and lucerne seed have been obtained specially from Káthiáwár, but it has been explained to the applicants that to meet the requirements of impending scarcity these perennial crops are less suitable than the quicker ripening varieties of jowár which under irrigation and other favourable circumstances give a very heavy yield of fodder and also of grain in quick time. Perennial crops require more time to become fairly established.

Lucerne.-There is little to add to former conclusions regarding this crop. It is liable to many mishaps, as damage by insects, blights, disease and rats. But when the crop thrives it yields heavily and pays well. It has been proved on the farm that a mixed crop of Guinea grass and lucerne is less risky and yields more than lucerne alone. The mixed produce is excellent fodder and
there are no practical difficulties in growing the crops mirod and reaping tho produce of such crop separately. The farm practice is to grow lucerne in ridges and this is recommended, because the crop can be conveniontly kept clean and remains healtly longer than if sown on tho flat. The bod system probably for a time produces, however, a heavier outtura.

## Experiments with Fibre crops.

50. Egyptian Cotton.-The experiments in former years proved that exotic varieties of cotton are unsuited to the conditions of Indian agrioulturo. Egyptian seed as supplied by Mr. J. N. Tata and by tho Reporter on Economic Products to the Government of India gave very poor crops as compared with indigenous sorts such as the Deshi and Goghari variotics of Broach. Sufficiont seed of the exotic varieties as grown on the farm was saved for trial on a suall scale and Mr. Tata kindly again supplied seed from fresh imports. Tho acclimatized seed and the newly imported seod was sown in comparison with DeshBroach and Goghari. The heavy rainfall of July completely destroyed the exotic seedlings. The indigenous seedlings were not injuriously affceted. The plots were small ( 1 acre for all) and as the object of the experiment was nullified by the destruction of the exotic seedlings, all the plots wore grubbed up and more useful fodder crops were sown instead.

As indicating the comparative values of the exotio and indigonous varicties in a favourable season, the outturn figures of the previous yoar may bo again reported as under:


Rhea.-This fibre plant was grown only in a comparatively small plot during the year under report. The soil is of moderate quality and depth and is capable of su'ccessfully growing with liberal treatment any of the ordinary crops of the district either as dry-crops or under irrigation. The Rhea was irrigated whon necessary and excepting in the hot weather grow with fair vigour, the best stalks being about $4 \frac{1}{2}$ feet high. The crop remained quite healthy and at the beginning of the current season provided by the sub-division of the roots sets for a considerable extension of area. In the current scason the plot occupies about an acre. No difficulty was experienced in extending the area. Almost every set grew, transplantation being done during light rainfall. Fibre was extracted by steeping the ribbons and cleaning in the ordinary country way and appears to be fine in quality and fairly clean. We cannot yet venture to report outturn results per acre. The cost of cultivation and of extracting the fibre is heavy and it is not likely that Rhea cultivation can be profitably introduced in the Deccan. The experiment will be persevercd with until definite conclusions can be published.

The proportionate outturns are as under:-
Por cont.

In comparison with the foregoing figures I give the following for ambari (Hibiscus cannabinus) and san (Crotalaria juncea), two common fibre plants in the Deccan :-

|  | Ripe stalk per | Fibre per acre. | Percentage Fibre to dalk. |
| :---: | :---: | :---: | :---: |
| Ambári (Hibiscus cannabinus) ... ... | $\underset{5,733}{\text { Lbs. }}$ | ${ }_{973}^{\text {Lbs. }}$ | $17 \cdot 0$ |
| San (Crotalaria juncea) ... $\quad \therefore$... | 6,280 | 520 | 8.2 |

## Experiments with other crops.

51. Bajri.-Only fire rarictics of this important cereal hare been identified throughout the Presidency and it is probable that no other varieties are known. The cultivation of the known varieties is carried on at the farm with certain definite objects in view :-
(i) To determine the adaptiveness of each variety for inferior, medium and fairly good soil.
(ii) To determine the comparative influence of different seasons (favourable and more or less unfavourable) on the outturn of the different varieties.
(iii) To improve the seed of each variety by selection continued from year to year, the best heads of grain being selected at harvest time from the most vigorous growing plants.
(iv) To distribute to suitable cultivators select pedigree seed likely to suit the soils and other agricultural conditions of their holdings.
The experiments have proved that some of the varieties (i.e.those originally got from the fertile province of Gujarát) are superior as regards weight and quality of grain and straw to the indigenous Deccan rarieties, if the conditions of soil and season are favourable. On the other hand with inferior soil and deficient rainfall or other adverse circumstances the evidence at hand indicates that the indigenous Deccan variety is in the Deccan most productive. We hope that by acclimatization and selection of seed the superior varieties may be improved and their power to resist adverse conditions of cultivation strengthened.

Wheat.-Numerous varieties of thisimportant cercal are cultivated throughout the Presidency. Small parcels of seed of all the well-known varieties were obtained. These varieties were grown side by side on the farm under irrigation, and in suitable soil considerable confusion exists regarding the identification of rarietios, because different vernacular names are given to the same variety, in different districts. At harvest time it was found that almost all plots, contained several rarieties. The seed when sown, although apparently true to variety, was in all cases mixed and in some instances very much mixed. It was easy to select from the ripe crops heads of grain which could easily be identified as belonging to a distinct varicty. This selection of pure seed was carefully done in all plots. We therefore have for cultivation in the current season small parcels of selected seed of over twenty varieties. There can be no question regarding the purity of the secd in each sample and there also can be no doubt regarding the general character of the plants from which each kind of seed was obtained. Mr. Mollison took careful descriptions of the plants of different varieties in respect of obscrrable characteristics. The intention is to continue the cultivation of varieties from year to year and try to improve them by careful selection of seed continued from-year to year. The behaviour of each variety, will be closely watched and any improvement or deterioration from the oricinal type noted. The susceptibility of the various varietios to diseaso, particularly to rust, will be studied. This may be found specially important, because in parts. of the Presidency in particular years the wheat crop is well nigh destroyed by rust. There is no doubt that some varieties resist rust attack in greater degree than others. There was clear evidence of this in the Farm plots. In Australia by a process of selection varietics have been obtained which to all intents and purposes are rust-proof. A trial of rust-proof varieties will not be neglected.. But there is more hope of successful results from efforts to improve indigenous varietics up to the required standard. Cross fertilization may be found a useful means towards the desired end. No actual remedy has, in any country, yet been found for rust, but as regards remedies for other fungoid diseases affecting wheat and other cereals, attention is directed to paragraph 59.

The soil of the Poona Farm is not suitable for the cultivation of dry-crop wheat. Trials will, however, be started on the Surat Farm which has deep black soil, very retentive of moisture, and therefore with favourable late rain suitable for dry-crop wheat. The proposed wheat experiments will no doubt
disclose particular characteristics in raricties which at presont hare escaped notice or are not commonly known.

Gram (Cicer arietinum).-This is an excellent rotation crop and requires light irrigation only. It has been grown chiefly on this account. Fodder crops are a speciality on the farm. The best are sorghums. Theso cannot be successfully grown continuously. Hence the necessity of growing gram-a leguminous crop and therefore a good rotation crop with sorghums. The rotation answered admirably for about five years. In 1897-98 thero was evidenco that the gram was not quite so healthy as usual. It withored promaturcly in patches. The plants in the patches when examined appeared to havo discased roots. In the year under report the diseaso in tho gram was much moro extensiro than in the year before. The conclusion come to is that frequent cultication of the same crop on the same land and continuous irrigation prodisposed tho gram to become diseased and it has been found desirablo to change the plan of cropping. We continue the cultivation of the various sorghums annually as rain fodder crops, three thickly sown roms of fodder jowir or sorghum allornating with one row of tur. The fodder jowar is cut early. Tho tur subsequently branches out and shades the ground. Practically two crops are got each season. The mixed crop exercisos the bencficial influenco of good rotation and tur having long tap roots resists drought and thereforo nocds no irrigation. Land which has become sick of irrigation is thus restcd.

Tur (Cajanuis Indious).-Two varieties havo boen grown on the farm for some years. The white seeded superior varicty gonerally cultivated in Gujarit and the red seeded variety commonly grown in the Deccan. As rogards outturn there is little to choose between varieties as grown on tho Poona Farm. But on the Surat Farm the Gujarét white variety gavo in the yoar under report far better results than the red Deccan variety. In each caso the tur was a subordinate crop with jowár.

## Olject-lesson crops.

52. All the known cereal, pulse, oil-seed and fibre-plant crops of the Presidency were grown in small plots in proper scason. The Agricultural students and Veterinary students of Parel Collcge had thus opportunities of noting the cultivation and characteristic appearances of such crops.

Every effort was made to accommodate the various crops to such description of soil as is usually found at least fairly suitable. But notwithstanding this -it is noteworthy that a few crops, which are not commonly grown in the Decenn, failed to show any vigour of growth. Thus lang (Lathyrus satirus), a common pulse in Broach; and guvar (Cyamopsis psoraliodes), a common pulso throushout Gujarít, produced insufficient crops. Saflower, tho dyo varicty of Gujarit. got blighted and damaged by swarms of aphides, whilst safllower, tho cill-serd plant of the Deccan, in the adjoining plot produced a healthy vigorous crop. Masur (Ervum lens) did not thrive, and rape and mustard although repcatelly sown were eaten up by insects almost as soon as the young scedlings appeared above ground.

## Sugarcane Experiments at Dfanjri.

53. Varietics.-Some years ago the various varicties of the Presidency were collected for experimental cultivation. In the first year somo varictics grew well, others did not thrire particularly well and in some casos failed. It was clearly demonstrated that experimental trials should preccdo gencral cultivation on a larger scale. By continucd cultivation it has been demonstrated :-
(1) that a variety which bas been deteriorated in the first ycar may, in subsequent years, through the influence of careful cultivation and acclimatization, improve' greatly as regards weight of cane jer acre and outtarn of gul per acre;
(9) that the outturn of gul from Pundia (the local varicty) is at least equal

(3) that two varieties introduced from Mauritius and two from the Southern Marátha Country have great tillering power and produce larger ratoon crop than Pundia. They are also less subject to damage by jackals, pigs and sugar-borers;
(4) that some varieties which are in general cultivation in parts of the Presidency could advantageously be replaced by other varieties which are unquestıonably superior.
Sugarcane comparative manure experiment.-In the year under report the services of the Agricultural Chemist to the Government of India were not available and the manures applied to the comparative plots were not analysed. The quantities applied were not, therefore, based upon the proportions of manurial ingredients which they contained, but upon the market values of the manures. It was decided to apply to each plot manure costing Rs. 160 per acre. This represents perhaps a lighter dressing than the best cultivators give, but in respect of some of the manures it was considered sufficient to secure good crops, particularly as the land was believed to be in good condition, the cane grown in previous years having been heavily manured. The land was rested in the previous year from irrigation. An unmanured crop of fodder jowár was, however, grown in the monsoon. Reference is invited to Farm Reports for the results of previous years. The general results of the year are tabulated below :-

| Dressing of manare in each case cost Ra. 160 per acre. | Valne of gul par acre. | Remarks, |
| :---: | :---: | :---: |
|  | Rs: |  |
| Niger seed cake ... | 732 | This in an oil cake which is edible and ordinarily used as cattle food, but is richer in manurial elements and cheaper weight for weight than the manure cakes commonly used. |
| Safflower cake | 708 | The above remarks also apply equally to this 'cake. |
| Poudrette as a first application, safflower cake as a top-dressing. | 702 | Ordinary cultivators use poudrette before plantation and top-dress later with castor cake. They do not usually employ safflower cake. |
| Fish manure | 684 | This manure as obtained from the Thána coast is used to some extent in the district by ordigary cultivators, but generally as a topdressing to supplement other manures like poudrette or farm-yard manure previously applied. |
| Farm-yard manure and castor cake as a top-dressing. | 682 | These manures are commonly used as in the experiments by ordinary cultivators. |
| Poudrette | 620 | Commonly used by cultivators. |
| Cattle dung $\quad \cdots \quad$... | 609 | Do. do. |
| Farm-yard manure (cattle dung and urine preserved with litter.) | 608 | Do. ${ }^{\text {- }}$, do. |
| Castor cake . ... ... | 602 | Not commonly used alone by cultivators, but as a top-dressing to supplement a short supply of poudrette or cattle manure. |
| Cotton seed , .... ${ }^{\text {c.. }}$ | 528 | Dear in the Poona District, but in large applications an effective manure. Probably would be an economical manure in cotton-growing districts where obtainable at cheaper rates. |
| Crushed bones and top-dressing of nitre. | 484 | Manure costly, therefore application costing Rs, 160 per acre was small. |
| Bones dissolved with sulphuric acid (Bone superphosphate). | 469 | Manure costly, therefore application costing Rs. 160 per acre was small. |
| Dissolved bones with top-dressing of nitre | 427 | Do. do. |
| Crushed bones | 398 | Do. do. cost of cultivation exceeded value of crop. |

The above figures show that the cultivators of sugarcane have at hand manures which are not ordinarily employed, which could be used with economy. and great advantage. In the neighbourhood of the Mánjri experiments, the
lessons of our experimental trials are being practically applicd. In tho current season and for the first time about 600 acres of cane in the neighbourhood have been top-dressed with saflower cake.

## Sugarcane vater experiments.

The experiments this year as in previous years clearly show that moderate irrigation at short intervals produces a heavier crop of cano than heavicr irrigation at either long or short intervals.' The best results were olstained with light irrigation at intervals of 8 days in the fair season, anl 33 waterings were given during the period of growth, which extended to almost exactly 12 months. The soil is black and fairly deep. The water given to the comparative plots was gauged.

## Mauritius system of planting cane.

The system consists of planting the sets in rather deep pits. Tho pits are dug at definite distances apart. Several sets aro planted in each pit, and as the shoots grow they are earthed up. The cane prows in clumps, which are firmly rooted in the ground, and are therefore not liable to lodge by wind or rain. The experiments have proved the system is advantageous for such varictics of cane as freely tiller; but for other varieties that do not freoly tiller, probably the ordinary system of planting, i.e., shallow planted scts at close intervals, is probably - best.

The sugarcane experiments were conducted at a profit of Rs. 304. The price of gul was higher than usual.

## Ganesh Khind Gardrns.

54. The plantation of mangoes was extended during the ycar, but the crop of fruit was exceedingly poor as elsewhere in the Deccan. Tho chiof rovonue was from grass. Expenditure exceeded income by Rs. 287. It is expected that the mango trees will be valuable in time. The plantation contains nearly 3,000 trees.

## The Dairy and the Dairy IIerd.

55. The profit for the year was Rs. 2,470. There wore 194 animals in the herd at the end of the year as comparod. with 187 at tho becinning. Fifty animals, chiefly young he-buffaloes and old cows, were sold. The herd was healthy throughout the year, and the present strength is about the full limit that can be conveniently maintained.

In the cattle-breeding and dairy operations cortain definito aims aro kept in view :-
(i) To breed up to a higher standard certain of the breeds of India as regards their milking capacity, and to maintain or, if possible, improve the usefulness of the same breeds for draft purposes.
-(ii) To supply pure milk and other dairy products to tho sick in hospital and, as far as possible, to tho public in Poona at rates which aro kept so high that our operations do not interfore with privato enterprizo.
(iii) To show by precept and example the advantages of cleanlinoss and improved methods and appliances in dairy manzesment, and the necessity of careful management and feedin: for dairy cattle.
(iv). To teach dairy methods-the manipulation of dairy machinery and cattle management-to those who attend at the farm for the purpose of being taught. Mere on-lookers are not admitted to these privilerges. Men who come to learn must also work.
It may be definitely said that progress in all the directions indicated above has been made from year to year and there has been no backslidiner in the year under report. Young cows bred on the farm aro proving themselves excellent milkers. The sales of milk and butter could be greatly increased with a larger herd, but with present facilities any increase is impossible. $\Lambda$ number of soldiers were sent for instruction in order to be alle to manase dairies and milk cattle
in other cantonments. The Department can take credit for initiating in India an enterprize which has had a material influence on agricultural prosperity, on the improvement of Indian butter, and its export trade.

The services of farm bulls are given gratis for all healthy cows.
A reservo supply of fodder equal to the requirements of a full year is always kept in stock. The whole of the departmental operations at Poona, inclusive of sugarcane experiments at Mánjri, agricultural operations at Kirkee, the Ganesh Khind Gardens and the dairy and dairy herd were worked at a profit of Rs. 172. The scason and other circumstances were unusually favourable and the financial. results abnormally good.

## Surat Farm.

56. The scason was favourable. In February abnormal rain fell in sufficient quantity to thoroughly soak the soil. Ploughs were every where at work in the district throughout the hot weather. The farm lands wero deeply ploughed during this time, and tillage operations were well advanced when the monsoon broke on the 10th June. The season between June and October may be characterized by periods of sufficient rainfall alternating with breaks of moderate extent, the only exception being heavy rain on the fourth week of July which caused considerable damage by flooding. There was full opportunity throughout the kharif season for thoroughness in weeding and other tillage operations. ,The rainfall of October, November and December was slight.

## Dry-crop land.

57. On this area experiments along definite lines of investigation have been started. These, as far as possible, are associated with ordinary work-a-day practices. The various experiments are referred to under approximate headings below.

## Manure rotation experiments with staple crops of the district.

58. The soil is deep black and the staplecrops on such soil in the district are cotton and jowári. The objects aimed at are to show-
(a) that it is not a good practice to take cotton and jowár in alternate years without any variation;
(b) the value of more extended rotation;
(c) the value of green manure;
(d) the value of growing a leguminous crop subordinate to jowár or at regular intervals;
(e) whether a dressing of concentrated manure costing Rs. 10 per acre applied every second year pays better than no manure at all; and finally that by means of a moderate application of farm-yard manure,: with the assistance of green manuring and proper rotation, the fertility of black soil can be maintained at a tolerably ligh level.
The experiments have now been in progress two years. Any comparison of the results cannot be made with exactness until the rotations are complete. 'The actual outturn figures will be found in Mr. Mollison's Annual Report. The results so far show in the clearest possible manner that an excellent object lesson is being placed before the cultivators of the district. The plots during growth and at harvest presented an extremely interesting study. They showed great variableness, but this variableness was entirely under control, because induced by intentional differences in treatment. The results this year and last show -
(a) that cotton and jowár taken alternately only produce moderate crops, although the cotton is manured with a fair dressing of farm-yard manure.
(b) Better crops aro got from cotton and jowár similarly rotated and manured, but with tur grown subordinate to the jowar.
(c) The effect of oxtending the rotation to threo years by growing a pulsu crop, or by giving a green manure crop of san, or by fallowing the soil for a year, increases the outturn from cotton and from jowir to a very considerable extent.
(d) An application of castor cako costing Rs. 10 per acro docs not in. crease the outturn of either jowir or of cotton to such an extent as to warrant the assumption that it pays better than no manure at all. This conclusion probably may, however, be modificl as the experiments proceed.
(e) An application of poulrette, equal in cost to the application of farmyard manure, gave exceedingly poor results. Neither tho jowir nor the cotton were appreciably benefited.
$(f)$ The no-manure plot have given very poor outturns, but before the experiments were started the soil was in excordingly poor condition. The difference between the no-manure plots and those that have received manure, and which have been unintentionally otherwise differently treated, ure very markod.

## The prevention of Fungoid disease in Cereals by stecping the seed before sowing.

59. Certain fungoid diseasos owe their origin to discaso germs which contaminate the see.J. The germs can be destroyed by steeping the socd before sowing in sulphate of copper ( $\frac{1}{2}$ per cent. solution) or in water at a temperature of 135 to 150 F. The hot water treatment is the simplest, but not 80 effective as the sulphate of copper. Boiling water and well water at any ordinary temperature, if mixed together in equal proportions, will give water sufficiently hot, but not too hot for the purpose. The temperaturo will ordinarily range from $135^{\circ} \mathrm{F}$ to $145^{\circ} \mathrm{F}$, depending upon the temperature of the well water. The results reported below, as obtained on the farm this year (a bad year for smut in jowári), are very striking.

| Crops. | Number of smutted heads per acre, unsteeped plot. |  | Number of amutted heads per acre ateeped with copper sulplate. |  | Number of amutted lieailo per acre ateeped in hot water. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - | Plot | Ylut | $\underset{\text { Plot }}{ }$ | $\underset{\text { Plot }}{\text { II }}$ | Mlot | $1 / \mathrm{lat}$ II |
| 'Smutted ears | 200 | 329 | 23 | 18 | 01 | 53 |

The improvement of seed by selection of the staple crops of the district.
60. Special importance is attached to this work, becauso it is believal that it is a means, which is neglectod in India, of improving the indigenous varictios of cultivated plants. These crops are so numerous in India that only a small number of the varicties can be taken up on the Government farms at one time for improvement. As pointed out above, progress is beins mado with varictics of jowár, bájri, wheat at Poona, and like progress is boing made with varictics of jowár and of cotton at Surat. As regards the latter crop wo are confinir" attention entirely to the local varieties. Surat and Broach cotton has a high reputation in the European markets. Experiments bavo proved that the introduction of exotics or of cottons from other parts of India are not likely t, cause permanent advantage or temporary good. We aim at improvement by careful cultivation, systematic rotation and by selection of seol, tho bigegest bolls of cotton being selected from the healtbicst and most vizorous growing plants at harvest time to provide secd for the following year.

Tho influence of this method of selection on the length of staple and quality of fibre will be watched, and wo hope to get rid of boll-worm entirely or to a considerable extent by choosing, for secd, bolls which are not affected ly hand ginning and by steeping the seed beforo sorving in copper sulphato solution.

This pest does extensive damage in the Surat and Broach districts, and the increase of the pest can unquestionably be attributed at least in part to careless selection of seed and the contaminating influence of the ginning factories. The selected cotton this year yielded very high percentages of lint, viz., Deshi 38 per cent. and Goghari 45 per cent.

## Experiments with Fodder Crops.

61. Experiments were started to test whether the sorghum fodders which usually give such excellent results in the Deccan, and which mature quickly could be successfully grown in the black soil of Gujarát as kharif crops and second crops of gram, \&c., taken in seasons when late rains were favourable. The results were disappointing and experiments will not further be continued. The black soil of Gujarat, owing to its retentive power, and because it gets very sodden when heavy rain falls, is in most years unsuitable for such varieties as grow quickly early in the season. The most successful varieties make poor progress during the monsoon, and do not reach maturity until December.

## Irrigated Crops.

62. The results with Guinea grass on the irrigated area are very satisfactory and the plantation has been extended. Applications from local cultivators have been received for sets in the current season and complicd with.

About 11 acres of the farm are commanded by three wells. The soil is deep black and very retentive and is not the class of soil which would be chosen as specially suited for irrigated crops. It can, however, be improved to the extent that it will in time become more suitable. The conversion of black soil, into garden land, even at considerable expense, is a useful object lesson: Ditches have been dug to drain surface water quickly to a lower level, which, by digging out, has been converted into two good rice beds. The consistence of the soil of the irrigated area has been considerably altered by growing green manure crops and by the addition of.heavy dressings of farm-yard manure, and now the land has proved itself capable of growing excellent crops of the hardier varieties of garden crops, such as surans (elephant foot), turmeric and yams, onicns, sweet potatoes, chillies, gourds, \&c. In time there is little doubt that the land will become valuable garden soil.

## Surat Dairy and Dairy Herd.

63. A herd of Gir cows and Surat buffaloes has been kept. since the farm was started. A small herd of Kankreji cattle (the best type of Gujarát cattle) has been added in the year under report. Efforts are being made to improve the Gir and the buffalo breeds for milk purposes in the same way as Sind and Aden cattle at Poona. The Kankreji cattle are essentially, a work breed, and although the cows milk fairly well, still, in improving the breed, the characteristics chiefly aimed at will be size, activity and adaptiveness, in other respects for draft or work.
64. The net cost of the Surat Farm was Rs. 5,048 in the year under report. A considerable part of this is debitable to permanent improvements and capital expenditure necessary for getting the farm into trim order.

The Nadiad Farm.
65. The results of the year's operations were not satisfactory, which is' partly ascribed to absence of timely rainfall and damage of crops by insects. The sales of the seeds from the seed store, which amounted to Rs. 894 during the preceding year, fell to Rs. 208, the lowest amount realized for a number of years. The seed store was started to supply sound seed to local cultivators not in a position to obtain such seed for themselves, but this object has not been fulfilled, as there is no local demand. Mr. Mollison fidds the present superintendent of the farm (a graduate of the Madras Agricultural 'College, paid at Rs. 25 per mensem) ineilicient, and recommends that a capable and experienced agriculturist, paid at about Rs. 60 per mensem, should be engaged. The accounts show a closing balance of Rs. 7,332 , or Rs. 239 more than the preceding year.

## The Hyderabad Farm.

66. A portion of the farm, measuring 17 acres 25 gunthas, is in the occupation of a private individual, to whom it has been leased for a period of 10
years, commencing from 1st April 1897. He is reported to have made some progress in rearing poultry, pigs, \&c., and cultivating bijri, jortári and regctables. About 42 acres have also been leased for wheat cultivation, and $3 \frac{1}{2}$ aceres moro are under lucerne, Guinea grass, carrots and pers. Tho romaining area is still lying waste, the Municipality not having been able as yet to erect the necessary engine for the water-lift at Gidu Bandar.

## The Empress Gardens.

67. The receipts, expenditure and deficit resulting from the manngement of the Empress Gardens by the Agri-Horticultural Society during the year under report, as compared with the results of the preceding yoar, were as noted below:-

|  |  |  | Receipth | Expendituro. | Dofait. |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Rs. |  | $\mathrm{R}_{\mathrm{s}}$. |
| 1837-98 | $\ldots$ | .. | 8,183 | 11,165 | 2,982 |
| 1898-99 ... | $\ldots$ |  | 9,071 | 10,361 | 1,S03 |

The satisfactory increase in the income of the gardens was mainly attribuiable to the energetic part taken by Mr. Mollison in the management. The deficit, Rs. 1,593, was less than two-thirds of that of the preceding year. 1 nearly equivalent sum was spent on special improvements, which showed that the gardens were nearly self-supporting.

The income of the gardens from the sales of seeds, plants, out flowers, fruits, vegetables and other garden produce, showed a satisfactory improvement. Seeds were carefully selected and special arrangements made for their storage. Plauts of well-known sorts did not command a great sale, and this was possibly on account of the competition of the many private nurseries existing in Poona. Some steps were taken to introduce new plants, which is an important function of the Society.

The culture of the various kinds of fruits and vegetables was succossful, particularly that of vines. Mangoes failed as in other localities.

The attractiveness of the ornamental part of the gardens was greatly increased and the gardens gained much in popularity.

The systematic labelling of the trees and plants was commenced by the Agricultural Office during the year, and is now being continued by the superintendent with the assistance of certain members of the Society. This important work will facilitate the preparation of a complete catalogue of the large stock of plants and will greatly increase the usefulness as well as the attractiveness of the gardens.

## The Bund Gardens.

68. The management of the Bund Gardens was taken ovor by the AgriHorticultural Society on the 1st February 1899. The offer of the Socioty to manage the gardens has been accepted for a period of three years, and Government bave agreed to make good any deficit in the accounts of both tho Empross and the Bund Gardens to the extent of Rs. 3,000 per annum. During the slort period of the year under report, the gardens under the successful management of the Society showed great improvement, and their popularity as ornamental gardens increased. The financial rcsults of the management relating to the period in question will be shown next year, but no deficit was incurred.

## b.-MISCELLATEOUS EXPERIMENTS.

69. Arrowroot.-The Dípoli plantation of arrowroot again yielded a poor crop, though good tubers were used as seed. Mr. Gogto concludes that arrowroot should not be grown on the same land for more than three years. About $5 \frac{1}{3}$ acres have been put under the crop during the current year.
70. Strawberries.-The Superintendent of Mahábaloshvar reports that strawberry growers have a sufficient number of plants propagated from the stock obtained from Bangalore in 1890-97, and that no new plants were brought for cultivation during the year under report.
71. Coffee.-As regards the cultivation of coffee on the lands leased to Ráo Bahadur Morey in the Supa Petha, the report received from the Collector в 2190-10
of Kánara shows that in 1897 a nursery of 3,000 soedlings was formed, last year one of 4,000 seedlings, and during the current year one of 2,000 . The seedlings of 1897 have been transplanted this year with an interspace of 6 or 7 feet on land measuring about an acre. The, seedlings are 2 to 3 feet in height and in a thriving condition.

Mr. Gogte, of Dápoli, has sown seed sufficient to raise 4,000 to 5,000 plants.
72. European Carrots.-Experiments were again made in some places with the following results :-

In Káthiáwár, the trial was continued in Junágad, Rájkot, Vankáner and Limdi, but the germination was very unsatisfactory and the plants were blighted and gave a very poor outturn. In the Kánara District the trial in Sirsi was a failure, but a good crop was obtained in Supa. In Kolhápur the seed sown failed to germinate. In Karíchi, trials were conducted in the Sehwan and Kotri Divisions. In the former, owing to inferiority of the soil, the outturn was fair, while in the latter the germination was partial and the gield low.

The Commissary General, Bombay Command, had the seed tried at Quetta, Deesa, Mhow and Nasirabad. At Quetta, one pound of seed of three different varieties sown in June gave an outturn of 556 lbs ; one pound was also sown in August, but owing to the very severe cold weather which set in during November the yield was only 350 lbs . At Deesa, 5 lbs. of seed of the red variety sown in November gave an yield of 614 lbs., and the poor result is attributed to the extreme heat of Deesa. At Mhow, 54 lbs. of seed was sown in July on 4 acres of ground, but much of the seed was washed away by rain, and the outturn was $53,574 \mathrm{lbs}$. At Nasirabad, 5 lbs . of seed of white variety and $\frac{1}{2} \mathrm{lb}$. of the red were sown. The crop was well irrigated and produced $8,002 \mathrm{lbs}$.
73. Sabai Grass.-The Deccan Paper Mills Company report that they have leased a large area of land in the vicinity of their Mills with the object of gradually utilising it for Sabai cultivation. At present they have 22 acres under Sabai. Their experiments to see what influence watering has in promoting the growth of flowering stalks, are continued. On land under the influence of the canal, the grass that was grown with ordinary watering showed a larger percentage of flower stalks than that which was cultivated with but slight irrigation. Their efforts to grow Sabai as a dry-crop failed during the year under report owing to want of rain.
74. Utilization of Bones as manure:-The following figures exhibit the export of bones from Bombay during the nine years ending 1898-99 :-


The quantity exported during the year under report shows an increase of 6,454 tons. Of the exports, 54 per cent. were taken up by the United Kingdom, 32 per cent. by Germany, and the rest by Belgium, France and Japan.

Messrs. Coen and Co. of Hubli esported 350 tons of plain bone-meal, 1,000 tons of bone-meal mixed with oil-cake manures and 150 tons of uncrushed bones.

## C.-IMPROVED AGRICULTURAL IMPLEMENTS.

75. The reports received from Collectors show that no new agricultural implements or machines were tested during the year under report and that there is nothing to add to the information already recorded about those in use. Mr. Mollison reports :-Ransome's Turnwrest plough continues to do excellent work on the Poona Farm and especially in the irrigated area when in suitable condition for ploughing. Its superiority over any indigenous plough in this kind of
soil cannot be doubted. It is only recommended for land which on account of irrigation is in a sufficient state of moistness to be ensily ploughed nt any season. Market gardeners whose gardens are eight miles from the farm come repeatedly to borrow the farm ploughs and use them extensively.

## D.-MEASURES OF PROTECTION.

(l) Arboriculture.
76. No reports have been received as to the estension of fuel and foddor 'reserves.

## (2) Extension of Communioation.

77. During the year under report the following additions were mado to opon mileage of railway lines:-Rájpardi to Nándod ( $18 \frac{1}{2}$ miles) on the Rájpipla State Railway, and Kankrakhadi to Chinchpada ( $72 \frac{1}{4}$ miles) on the ThiptiValley Railway.
(3) Irrigation.
78. In the Presidency Proper the total area irrigated from Government canals and tanks under the management of the Public Works Department-35 in number-was 102,091 acres, showing a fall of over 18 per cent. below that of the preceding year. There was an in crease of 1,930 acres under cleven irrigntion works, chiefly under the Khári Cut; ;Multi and Ekruk tanks and Yorls River Irrigation Works, but it was too small to counterbalanco the large decrease of 24,690 acres under the other works. The decrease mas most marked under the Nira ( $-13,214$ ), Mutha ( $-4,646$ ) and Hathmati ( $-1,110$ ) canals, and was principally due to seasonable rainfall.

In pursuance of the policy of Government regarding eficient and systematic treatment of old irrigation tanks in Gujarát and the Southern Marátha Couutry. an outlay of Rs. 57,500 was incurred in repairing and improving 75 such tanks -5 in Ahmadabad, 19 in Surat and Broach, 12 in Belgaum and 39 in Dhárwár,

As will be seen from the following section, encouragement continued to be given for the construction and repair of wells and tanks by tagri advances. In the Presidency Proper, Rs. 1,81,800 were advanced for this purpose.
(4) Tagai Advances.
79. The following statement compares tagii advances made during the year ending 31st July last with those of the preceding jear:-

| Povince. | 1897-98. |  |  | 1809.09. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Under the Land Improvement Loane Act No. XIX of 1883. | Onder the Agriculturist: Lonns Act No. XII. 1884. | Total. | Onder the Land Improvement Loans Act No. XIX of 1883. | $\begin{gathered} \text { Onder the } \\ \text { Agriculturists' } \\ \text { Loang Act } \\ \text { No. XII of } \\ 1684 . \end{gathered}$ | Total. |
|  | Rs. | Re. | Re. | Ra. | Re. | Is. |
| Gujarát ... | 4,670 | 30,209 | 34,879 | 13,594 | 62,882 | $76,276$ |
| Deccan ... | 1,81,005 | 3,98,214 | 5,79,219 | 1,73,407 | 1,05,286 | 2,78,693 |
| Karnátak... | 19,797 | 2,67,839 | 2,87,638 | 1,27,359 | 25,703 | 1,53,152 |
| Konkan ... | 14,030 | 9,144 | 23,171 | 20,945 | 6,615 02024 | 27,550 $2,80,970$ |
| Sind | 29,674 | 34,367 | 64,041 | 1,88,946 | 02,024 | 2,80,970 |
| Total | 2,43,176 | 7,38,773 | 9,83,943 | 5,21,251 | 2,92,400 | 8,13,551 |

N.B.-The figuree for 1507.98 are thote publiched in the Jaterbandi Beporta,

It will be seen that the total adrances were 10 per cent. belor those of the preceding year. It is probable that but for the provalence of the plague and the curtailment of the funds placed at the disposal of Government, tho alvances would have been greater. The adrances made in tho Deccan and tho Kirnitak show a decrease, while those in Gujarát, Konkan and Sind show an increase, dua to the fact that during the financial year 1897.98 the funds allotted to the
latter divisions were, as explained last year, rithdrawn and assigned to the former divisions, where owing to the preceding famine all the assistance that was possible was required for the replacement of cattle and the purchase of seed. It will also be seen that the total advances under the Agriculturista' Loans Act, 'Which during the preceding year were for the first time far in excess of those under the Land Improvement Loans Act, resumed their normal relation during the year under report.

Of the money advanced in Gujarát, Rs. 48,000 were taken by Broach, nearly Rs. 20,000 by Surat and nearly Rs. $6,900 \mathrm{by}$ Ahmadabad. The Collector of Broach states that the system is capable of further extension, and suggests that a much larger sum should be placed at the disposal of the Commissioner. In the Panch Maháls the system was taken advantage of only in .Dohad and Jhálod, which took Rs. 1,327, and no money was advanced in the Western Maháls owing to plague. Kaira took an insignificant sum (Rs. 100) and the Collector remarks that very little seems to have been done to popularize these advances in this district. To this reason may also be added the prevailing low rate of interest. In 1894-95, Mr. Atkins reported that "for the Patidár class tagai is rarely requiied, for the rate of interest charged by money-lenders is extraordinarily low." The sums advanced in Panch Maháls and Broach were all under the Agriculturists' Loans Act, and the Collector of Broach states that the Land Improvement Loans Act is seldom taken advantage of, as wells are seldom dug in that district for irrigational purposes.

In the Deccan and the Karnátak every district took a large sum-between Rs. 40,000 and Rs. 80,000 -excepting Khándesh and Násik, which took respectively only Rs. 28,000 and Rs. 4,740. The Collector of Dhárwár states that the advances in his district amounted to much less than in preceding years owing to the widespread plague epidemic, and observes:-"This is, I think, a matter for congratulation rather than regret, as the prevalence of an epidemic not only prevents the borrower from spending the advance properly and renders supervision difficult, but is likely to give rise to complications regarding security, transfer of liability for advances and recovery."

In the Konkan the sums received were :-Thána Rs. 3,370, Kolába Rs. 9,140, Ratnágiri Rs. 6,842, and Kánara Rs. 8,208.

In Sind the system is getting more and more popular, the sums advanced in Karáchi (Rs. 92,000), Shikarpur (Rs. 83,000) and Upper Sind Frontier (Rs. 45,000 ) being the largest taken by them since $1890-91$,-the former two amounts being the largest taken by any district in the Presidency during the year under report. The Collector of Karáchi reports that it is still difficult and in many places impossible to obtain loans from ordinary money-lenders on anything less than mortgage with possession; and the Deputy Commissioner, Upper Sind Frontier, states that money-lenders "would not advance under any conditions less than actual alienation of a portion at least of the estate from fear of, the Zamindárs going under management."

Of the advances under the Land Inprovement Loans Act, 42 per cent. were granted for constructing and repairihg wells and tanks-mostly in the Deccan, Karnátak and Sind, and 10 per cent. on constructing and repairing canals in Sind. The rest of the money.was advanced for raising embankments, uprooting weedgrasses and similar land improvements.

It is believed that advances were generally applied to the purposes for which they were granted. In some cases, however, money advanced was found to have been misapplied and was consequently ordered to be recovered at once with interest accruing up to date. The Collector of Kánara réports that in a few instances, where the works were partially incomplete owing to circumstances beyond control, a reasonable extension of the period was allowed for the completion of the works.

The reports show that loans were repaid on due dates except in a few instances where previous bad seasons and prevalence of plague necessitatea suspensions. The Collector of Sátára, however, reports that during the last twe - years some persons able to pay have made default on the general excuse ot plague and famine, and steps have had to be taken, as in the case of land revenue,
for the recovery of the instalments by compulsory processes. In their Resolution No. 5759 of 30th November 1809, Famine Department, Gorernment have warned all officers concerned not to grant loans to persons who aro already defaulters in respect of land revenue, or are in effect men of no substanco, without sufficient enquiry into the securities offered. The danger of granting loans indiscriminately is shown by the remarks made by the Collector of Dijipur in his Administration Report for 1898-99 on the subject of the arrears of adrances made during the preceding two years.

## OIIAPTER VI.

## AGRICULTURAL EDUCATION.

80. As a step towards reviving the Agricultural classes which were languishing for want of students, the scholarships attached to the classes have been reduced in number and raised in value.

The University have recently agroed to the conversion of tho Diploma in Agriculture into a degree, and Government have also been pleased to direct that the Licentiates of Agriculture should have a preferential claim to District Inspectorships of Agriculture before other officials of the Revenue Departwent or those of the Survey Department who do not know English, and that they should also be placed on the same footing as Licentiates of Civil Enginecring for admission to the Forest Department, provided they undergo the special course of training in forest subjects and pass the same tests in those subjects as Licentiates of Civil Engineering are required to do to qualify for such appointments.

With the advantages noted above, native gentlemen-both land-owners and others-who wish to see their sons graduated and to enter them in Government service would find the dogree in Agriculture as an alternativo preforable in many respects to the usual course in Arts, and Government have also intimated that they are inclined to form a favourable opinion of any officer who whilo not in. ferior in general education and mental calibre to the graduate in literary subjects is a man of active out-door habits and trained in the observation of agricultural facts, in the handling of domestic animals, and the organization of field labour.

## CIIAPTER VII,

## PUBLICATION OF AGRICULTURAL INFORMATION.

## A.-AGKICULTURAI STATISTICS.

81. As last year, the Imperial Tables $A, C, D$ and $G$ of Agricultural Statistics were submitted to Government for transmission to the Director-Gencral of Statistics.


## Return No. I.-Details of Area.

82. This return shows the gross area of the Presidency inclusive of villages held on privileged tenures, but exclusive of feudatory and tributary States. In the Presidency Proper the area is still approximate, as arcas in unsurvej d tracts are only estimates. In Sind the unsurveyed area is now licrited to une village in Upper Sind Frontier,

в 2190-11

In the Presidency Proper the gross area returned was curtailed by $414^{\frac{3}{4}}$
 square milcs. The marginal table, in which noticeable rariations are set out, will show that Kháodesh is in a large measure responsithe fur the decrease, a large area in which registration was imperfect having been omitted. Elscwhere the changes are due to survey operations.
In Sind the total number of villages increased by 8 on account of the formation of new villages, but the area decreased by about 6,000 acres or over 9 square miles. This was the result of numerous changes noticed below in detail.

Area for which statistics are availabic.- In the Presidency Proper, the number of villagos decreased by $57 \frac{1}{3}$

| District. |  |  |
| :---: | :---: | :---: |
|  | Villages. | deres. |
| Khándesh ... | ${ }_{-}^{-142 \frac{12}{3}}$ | -288,950 |
| Pancl Nabals ... |  | ${ }^{+18,590}$ |
| Thäna ... ... | -10 | +4,186 |
| Ahmodnagar ... | +3 | +6,113 |
| Salgaum Bel | $\pm 1$ | ${ }_{-2,373}$ |
| Näsib ... ... | +1 | $+162$ | villages and tlie area by 167,730 acres. Important clanges are shown in the margin. In Khíndeslr $142 \frac{1}{2}$ "other Government" villages were transferred to the catcgory of those for which statistics are not arailable, and the estimated area of this large unsurveyed tract was reduced by 261,000 acres. One surveyed Inám village was similarly transferred, the statistics being not trustworthy. Besides these, 13 other Government villages ard one Inam village in the same district were survejed and thus rendered capable of furnishing crop statistics. These statistics were also introduced in 58 "other Gorernment" and 35 'Talukdari or alienated villages of the Panch Maháls. The villago officers of 4 villages (two Government and trwo alienated) in the Poona District failed to colloct crop and other statistics. In Thána 10 Government villages were transferred to the head of statistics non-available. Five such villages were placed in the class of "other Govermment villages" and 15 iu that of surreyed alienated villages. These changos were cffected to make the classification of villages more correct: In Ahnednagar one Inám village was resumed by Government and thre Government villages were surveyed and put in a position to furvish statistics. In Kaira 89 villages of the Narva tenure were transferred to the class of village; of Rayatwári tenure and three Iuam -villagis were made to supply statistics. One village in Bolgaum could not furnish any information, as the villago papers were destroyed lig fire. One village of Násik bei, $g$ surveycd supplied statistics. Correct registration of Goverument land in Inan villages and Inám land in Government villages explain the changes in Sholápur and Sátára. One Iiám rillage in Dharrwár and one village of other than Rayatwári tenure in Ratnágiri lapsed to Government.

In Sind the villages of a vailable statistics increased by 8 , but the area decreased
 by about 6,000 acres. Tho district changes are tabulated in the margin. In Karáchi 9 Government villages were ranked with other Government villages, their settlement being suspended in consequence of the obliteration of the boundary marks by floods. One village of the latter class was surveyed and another split upintotwo alienated villages. The net result was an increase of one village. In Shikarpur five, villages were newly formed wut of the existing ones. The district area was curtailed by over 5,000 acres. Some area was newly formed by the river, but a very much larger area was eroded. The decrease in Myderabad was the net result of correct registration, exclusion of temporary cultivation on river eides, territorial changes and re-measurement under survey operations

Thar and Parkar gained some area by transference fiom $\mathrm{H}_{\mathrm{y}}$ derabad, and two villages of this district, were split up into four. Alluvial acerotions chictly account fur the increase in the Upper Sind Fronticr.

Non-reporting villages.- $1,709 \frac{1}{2}$ Goverument villages with an arca of 5,136 square miles and $807 \frac{1}{2}$ alienated villages with 2,019$\}$ square miles dil not furnish statistics of cultivation in the Presideney Proper. Tho number of nonreporting villages (Government and Alienated) incrensed by 57 . . Tho causes have been explained in reporting on the area of availablo statistics. In Sind the non-reporting arca has remaincd the same.

## Return No. II.-Cultivated, i.e., Occapied area and Uncultivated, i.e., Unoccupied area.

83. The subjoined table exhibits variations as compared with last year in areas under sub-heads of cultivated and uncultivated land.

Area in Acres ( 000 omitted).

|  | lemendeney Puoper. |  |  | SIND. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\therefore$ Detuil. | 1897.98. | 1898-09. | $\begin{array}{\|c\|} \text { Incresse } \\ (+1) \\ \text { or decreass } \\ (-1 \\ \text { perceut. } \end{array}$ | 1897.08. | 1808.09. | Increane ( + ) op deereand (-) per cent. |
| 4.-Cultivaled Aram- |  |  |  |  |  | -11.8 |
| $\begin{array}{llll}\text { Gross cropped area } \\ \text { Cropped more than once } & \text {... } & \text {... } & \text {.. }\end{array}$ | 21,313 755 | 24,690 728 | +1.1 $-3 \cdot 6$ | 1,063 262 | 3,280 4289 | -118 -12.3 |
| Net cropped aroa ... ... | 23.658 | 23,962 | +1.7 | 8,809 | 3,057 | $-18.3$ |
| Current fallows ... | 6,300 | 6,967 | $-5 \cdot 3$ | 4,164 | 4,770 | +146 |
| Asseased Unassessed | 29,754 104 | 29,873 66 | +0.4 -40.3 | 7,257 710 | 7,283 044 | +04 -234 |
| Totsl A. ... | 29,853 | 24,829 | +0.2 | 7,007 | 7,827 | $-1.8$ |
| B.-Unoultivated Area- |  |  |  |  |  |  |
| Arsilable for cultivation $\{$ Assessed ... | 944 | 931 | -1.1 | 700 | 829 | $+8 \cdot 1$ |
| Arsilable for cultivation. - \{ Unassesaod... | - 697 | $47 \%$ | -20.6 | 6,20t | 6,2!93 | $+1.7$ |
| Not available forcultivation \{ Forest | 7,263 | 7,111 | $-2.1$ | 763 | 761 | $-0.3$ |
| Not available forcultivstion. $\{$ Othera | 4,973 | 5,0:2 | $+09$ | 15,262 | 15,230 | -0.1 |
| Totsl B. $\cdot$.. | 13,777 | 13,538 | $-1.7$ | 21,979 | 22,113 | +00 |
| Grand Total .. | 43,035 | 13,167 | -0.4 | 20,040 | 20,010 | $-0.2$ |

In the Presidency the "gross". and the "nct cropped" arcas both in. creased over 1 per cent., and marked a further recovery from tho shrinkago of 1890-97. But they are still belory the averago of tho 10 years preceding that famine ycar. Tho area cropped moro than once decreased by 3.0 per ceut. In sind the areas declined noticcably. The district variations are shown in tho tablo in the maryin. It will bo seen that the not cropped area expanded in all districts oxeept Broach, Sítíra, Khándesh and Poona. In the first named district some area remained fallow after the removal of the cotton damared by the excessive July rain. In Sátira the kharif sowing rain was deficiont in the eastern parts. In the other two districts tho decreaso is nominal, being duc to the diminution of the gross area already explained under Return No. I. The fluctuations in the current fallow mostly correspond with those in the cropped arca. Changes other than thoso due to season are indiontorl he enlumn 4. Ther aro either
due to newly occupied land, or reversion of land to the unoccupied area, or to the increase or decrease in the gross area itself. New lands were brought under cultivation in Ahmedabad, Surat, Násik, Bijápur, Dhárwár and Kolába. Reversion to the unoccupied area took place in Sattara and Bclgaum. The changes in the gross area already noticed explain the modifications in Kaira, Panch Mahâls, Khándesh, Poona and Ahmednagar.

In Sind the cultivated area decreased in all districts on account of insufficient rain and low inundation, and the area left fallow increased. Reduction in excess of the increase under fallow is attributed to the reduction in the gross area of the districts or exclusion or relinquishments of temporary cultivation.

The area cropped more than orce in the Presidency Proper decreased by 27,000 acres of 3.6 per cent. This is mainly attributable to the deficiency of kharif rain in the eastern parts of the Deccan and the Karnatak districts, where some area was left unsown till the rabi season. In Sind the low inundation and want of sufficient moisture curtailed the twice cropped area by 33,000 acres or $12 \cdot 6$ per cent.
84. The following table summarises the distribution of fallow of the Presidency Proper under the six specified heads:-

> Details of "current fallow" ( percentages).


Ju Compared with last year the total fallow decreased everywhere, noticeably in the Karnátak, as the favourable season led to expansion of cultivation. Fromı Bijápur it is reported that the people extended cultivation without due regard to customary rotation in order to raise funds to meet tagai advances, As a natural résult of the good season land left fallow on account of season showed perdeptible decreases in: all parts in favour of grass land or fallow in rotation.s: In Gujarat the iirerease is credited to miscellaneous fallow and in tho Konkan to rab lanid.
If 85 - Uncultivated, i.e unoccipied area.-The reductions in the gross area of 'Kliándésl', Poóna and Thána, especially of the first named district, together with the fresh occupations noticed above, curtailed the unoccupied area, but the decrease was partly compensated by the increased gross aroa-of Kaira, the Panch Málials and Ahmiednagar, and the reversion in Sátíra and Belgaum. The net decrease twas 239,000 acres or 373 square miles. The unoccupied area of 'Sind increased by 134,000 acres or $209 \frac{1}{2}$ square miles.
.s Of the land available for cultivation, assessed land showed a decrease of 13,000, and unassessed of 123,000 acres; together they curtailed the margin for
fresh occupation by 136,000 , acres. In Sind, on the other hand, such area increased by 157,000 acres.
86. Forest.-The area under forest on the whole decreased by 152,000

| District. |  | - | (Acres 000 omitted). |
| :---: | :---: | :---: | :---: |
|  |  |  | Variation. |
| Khándesh | $\ldots$ | $\cdots$ | +125 |
| Tbána ... | ... | . | -40 |
| Panch Maháls | ... | $\ldots$ | $+10$ |
| Dhárwár. | ... | ... | +2 |
| Sátára ... |  | .. | +1 |
| Poona ... |  | -• | -1 | acres. Noticcable variations occurred in the marginally noted districts. In Kháudesh and tho Panch Mahíls and Poous they aro accounted for by the chango in tho gross area of the districts. In Thina a large area was disforested. Forest received additional area in Sátára and Dhármár. In Sind the forest aroa did not show any remarkable fluctuation on the whole.

87. The table given below (which is inserted in every annual report) endeavours to show, by combination of the information contained in Tables I and II, the distribution of cultivation and the margin of land left for the expansion of cultivation in the different districts. In the Presidency Proper the area for which statistics are not available has remained tho same. In Gujarit this area decreased from 8.2 to 6.1 per cent., a large area in the Panch Mahils district being transferred from the category of "unavailable" to "arailable" statistics. The net area cropped increased in the Karnitak by $2 \cdot 1$ per cent. This being due to the extended cultivation of the usually occupied area, there, was a corresponding decrease under fallow. In Sind, deficiency of watcr causcel $\checkmark$ by low inundation and absence of rain curtailed the net cropped arca ly 2.5 per cent. This appeared in the form of fallosv and to a slight extent in the margin of land available for cultivation. Other changes are not remarkable.



Return No. III.-Crops.
88. The main features of the season and harvest of the year are described elsewhere in this report. The following table shows the effect of the season on the area sown. In the Presidency Proper, jowári and bajri, and tur, which is often cultivated as a row crop with the millets, showed decreases. All other crops, cereals and pulses, as well as non-food crops, increased, the extension under wheat, gram and cotton being very remarkable. The reduction under the millets and tur was to a considerable extent a shrinkage from their extensive cultivation in the previous year necessitated by the famine of 1896-97. The cultivators having repleted their stocks from the good harvests of 1897-98 appear to have given preference to the cotton and oil-seed crops. Wheat and gram were encouraged by favourable rains at the time of sowing. Though the area placed under wheat in the Presidency as a whole was larger, in the Deccan it has not fully recovered from the diminution induced by the late famine. The percentage

47
increases under tobacco and sugarcane are also large. But the total cultivation under these crops is comparatively small.

In Sind there is a general decrease under all heals. The area under cereals has contracted $16^{\circ} t$ per cent.; that under pulses 100 per cent.; mider food-crops $15 \cdot 8$ per cent. ; and non-fuod crops $35^{\prime \prime} 1$ per cent. This contraction is due to low inundation and scanty rain.

Table to show effect af season on area soren.
(Area in Acres, 000 omitled.)

| Crops. |  | Pris.demcy Propkr. |  |  | Sixd. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 1897.98. | 1598-99. |  | 18.7.99. | 189899. |  |
| Jowári... | $\ldots$ | 7,906 | 7,542 | $-4 \cdot 6$ | 711 | 515 | $-30.5$ |
| Bajri ... | ... | 4,777 | 4,189 | $-12.3$ | 80,5 | 770 | -4:5 |
| Paddy ... | ... | 1,653 | 1,726 | +4.4 | 899 | 898 | - 0.1 |
| Wheat ... | ... | 1,403 | 1,850 | +31.3 | 573 | 351 | -38.7 |
| Others... | Total; Cereals | 1,615 | 1,628 | + $0 \cdot 8$ | 63 | 19 | -12.1 |
|  |  | 17,360 | 10,935 | -2.4 | 3,052 | 2,553 | -16.1 |
| Tur Gram ... Others.. |  | 627 591 | 616 759 | -1.7 +28.1 | 60 | £3 | - $\quad 3.7$ |
|  | ... | 1,472 | 1,503 | +2.1 | 200 | 18. | -8.0 |
|  | Total, Pulses | 2,030 | 2,578 | +6.9 | 260 | 237 | $-10 \cdot 9$ |
| Tobacco Sugarcane Oil-seeds Cotton... |  | 72 | 94 | $+30 \cdot 6$ | 9 | 0 | ... |
|  | ... | 54 | 58 | +74 | 3 | 3 |  |
|  |  | 1,450 | 1,590 | +97 | 498 | 203 | $-41.2$ |
|  | ... | 2,222 | 2,645 | +19.0 | 107 | 92 | -11.0 |
| Food Crops, Total |  | 20,282 | 20,039 | -1.2 | 3,366 | 2,532 | $-158$ |
| Non-food Crops, Total |  | 4,031 | 4,650 | +15.3 | 698 | 453 | $-35.1$ |
| Total, Crops |  | 24,313 | 24,689 | $+1.6$ | 4,001 | 3,285 | -102 |

Jowari and Bajri.-The marginal table shows the variations in the areas under

| Distat. | Actera (000 Owifted). |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Jowári. |  | Bajri | $\underset{\text { Net }}{\text { Naristion. }}$ |
|  | Kharit. | Babl. |  |  |
| Presidency Proper. |  |  |  |  |
| Ahmadabed ... ... ... | -58 | $\cdots$ | -1 | -99 |
|  | +8 | $\cdots+1$ | -10 +8 | +8 |
| $\begin{array}{llll}\text { Panch Mahais } \\ \text { Brosch } & \text {... } & \text {... } & \text { m. }\end{array}$ | ... | +1 +3 | $\pm 1$ | +8 |
| Surat … $\quad . .0$... | -5 |  | - -229 | -66 |
| Khandesh ... ... $\quad$ - | -187 | $\underline{+18}$ | - 208 |  |
|  | -2 | +18 +48 | - 235 | -143 |
| Poons ... | -10 | - 86 | +14 | -83 |
| 8holípuz . ... .. .- | +8 | +68 | -18 | 447 |
| Saxtara ... ... ... ... | -8 | -78 | +64 | -301 |
| kelganm $\quad .$. | -78 +8 | $\pm 72$ | +15 | $\underline{-13}$ |
| Bijapar    <br> Dhárwar ... $\ldots$ .. | $\xrightarrow{+8}$ | $+33$ | +15 | -21 |
| Total | -388 | -24 | -50it | -081 |
| Sind. |  |  |  |  |
| Karfichi ... ... .. |  | -89 | -5 | -81 |
| Hyderabad ... ${ }^{\text {-. }}$ - |  | -27 | - -7 | $\underline{-27}$ |
|  |  | -19 | -1 | -120 |
| Thar and Párkar ... |  | -7 | -24 | -31 |
| Total |  | -2.8 | -37 | -263 |
| Grand Total ... |  | -680 | -0.4 | -1.214 |

tinn and want of sufficient rain. jowari (kharif and rabi) and biajri. In the preceding year thrse millets were grown to a large extent in all districts to replenish the exhausted stocks. During the year under review some of these districts substituted the more paying crops of cotton and oil-seeds when they found the sowing more favourable for them. In other districts, especially in the castern portions of the Deccan and the Karrátak, the kharif cultivation was curtailed by the deficiency of rain in July and August. Thus the net variations of the two crops shows a general decrease, except in the Panch Mahails, Sholippur and Broach, noticenbly the first two in which the cotton area is conuparatively too limited to replaco tho millts. In Sind, jowári and lájri both declined owing to lor inunda-


Paddy.-In the Presidency Proper the cultivation of paddy recovered by 73,000 acres. The marginal table shows a general increase due to favourable rain in all the rice-growing parts of the Presidency. The only districts which show decreases are Broach and Khándesh, but in both of these the rice area is comparatively small and other crops more suited to the rains were allowed to occupy a larger area. In Sind, Shikárpur and Upper Sind Frontier are said to have extended their rice cultivation in the expectation of good inundation or rain. In the other districts the rice area decreased with other crops.

Wheat.-Total expansion of 441,000 acres. The partial recovery of wheat during the provious year was completed in the year under review. The aggregate area was in excess of that in the normal year of 1895-96. Heavy rain in September and October induced larger cultivation of the crop, especially in the eastern tracts of the Deccan and the Karnátak. In these parts much of the kharif area'which could not be sown with the kharif cereals was devoted to wheat. In Ahmadabad and Surat, the only districts which show decreases, the area which would otherwise have been placed under wheat was occupied by cotton. In Sind a better supply of water in the canals during the rabi season led to an increase in Thar and Párkar. Elsewhere the wheat ared shared the general decline.

[^0]

Pulses-Pulses taken to-
gether showed an expansion of 185,000 acres, chiefly credited to gram ( $+168,000$ aeres) and miscollancous pulses $(+31,000$ acres). Tur followed the courso of the millets with which it is oultivated as a principal row crop and showed a net decrease of 11,000 acres; it is not grown in Sind. The general increaso indicated by the figures under gram is due to sulliciency of rabi rains. In Sind this pulse on tho other hand decreased liko other crops.


相 Tobacco.-General increase. Good harvest of food crops in the proceding year affording greator scopo for non-food crops in this year, favourable rain, the neces. sity of meeting tagai debts by paying crops, and better prices, all these causes are said to have combincl to incraise the extent of cultivation by 22,000 acres or over 30.6 per cent. In Sind this area remained stationary.

Sugarcane-Aggregate increase of 4,000 acres or $7 \cdot 4$ per cent. The increase is general and is duo to higher prices of gul obtained in the previous ycars and to good supply of water in wells and canals. The area, though in excess of the precoding ycar, is still much below the figures of the previous nine ycars.

Oil-eeeds.-The figures given in the margin show a general increase except under groundnut and 'others' in the l'residency
 Proper. Favourable season, more room left by the extended sowings of food crops in the preceding year, and an inducement to grow moro paying crops to meet targi advances taken during the famine helped to encourago the cultivation of oil-seeds. But though the total area rose from 1,450 to 1,500 thousaud acres, it is only a partial revival from tho fall of 1890.97 . The area is still 22.4 per cent. below that recorded in 1895-96. Some of these crops are important articles of trado and deserve spocial notice.

Sessme.-The area under this crop increased 32,000 acres or 11 per cent. above the preceding year. The scantiness of the sowing rain curtailed the arca in Poona, Sholápur and Dhírwár; but the deficiency was more than made up by the extended cultivation induced by farourable rain in Ahmedabad, Panch Diaháls, Broach and in the North Deccan.

Linseed.-Cultivation chielly confined to the districts of the Decoan and the Karnátak, in almost all of which the extent of cultivation increased owing to good sowing rain in September and October. The small decrease in Bijápur is attributod to the restricted area of the rabi jowári with which linseed is mised.

Groundnut.-The area continues to recede. During the year under reviers it showed a further fall of 10,700 acres or 11 per cent. The decrease is general except in Poona and Sholápur, where the cultivation remained stationary. The decrease is attributed partly to want of scasonable sowing rain and partly to discouragoment caused by partial failuru of crops of the previous two scasons and diminished demand.

The important oil-seed crops in Sind are sesame and rapeseed. Like other crops both decreased perceptibls.


Cotton.-The cotton area rose by 423,000 acres or 19 per cent. The increase is almost gencral and is due to the previous year's area being abnormally low owing to the extended cultivation of food and fodder crops consequent on the scarcity of the preceding year. Broach, Belgaum and Dhárwár alone show some' decrense in area owing to absence or excess of rain at sowing time. In Sind the decrease was attributed to deficiency of water-supply.

Potato.-The area corcred by the crop was 9,400 against 8,000 acres of the previous year. Poona continues to claim more than 75 per cent. of the total area of the Presidency Proper. Of the aggregate expansion of 1,400 acres, this district alone showed an increase of over 800 acres. The remaining increase was shared by Ahmednagar ( +200 ), Sátára ( +180 ) and Dhárwár ( +190 ).

Green Fodder. -The important crops are lucerne and hot weather jowári. The area under the former decreased from 2,392 to 1,979 acres and that under the latter from 22,831 to 14,105 acres. Lucerne is chiefly grown in Ahmednagar ( 1,118 acres), Poona ( 418 acres), and I hána ( 211 acres). Hot weather jowári diminished mostly in the districts of the Deccan aud the Karnátak, thereby indicating that the decrease is a continuation of the shrinkage from the large area of the last famine. In Gujarát, Almedabad considerably reduced its area, but Kaira and Broach extended it.

Kharif and Rabi Cropg.-The details given in the subjoined table show variations under kharif and rabi cereals and pulses of the Presidency exclusive of Sind, and give the main features of the season:-

89. Below are the usual tables showing the distribution of crops. Statement A shows the distribution of the principal crops in each district. Statement ls shows the proportion of the area of each crop in cach district to tho grows area of that crop in the Presidency Proper. Sind is included in Statement A. A separato statement similar to $B$ is prepared for Sind with pereentages shown on the gross area of Sind:-
A.-Distribution of Crops-Percentages on Dishrict Areas.

B.-Distrilution of Crops-Percentages shown on the dica of the Presilency Proper.

B.-Distribution of Crops-Percentages shown on the Area of Sind.


## Outturn of Crops.

90. The following table gives the reported anna valuation of the outturn of the principal crops in each district. The valuation (by Mámlatdars) purports to conform to the standard prescribed in Government Resolution No. $7 \% 5$, dated 1st February 1898, Revenue Department, by which a normal crop is designated as a 12 -anna crop. The table must, however, be taken as representing a merely approximate estimate.

- Approximate Anna Valuation of Principal Crops in each District, 1508-03.

- Malze.

Note. - In the above table valuations are calcolatod on the otandard of 12 sanas to the normal crop.
In Gujarát and the Konkan, the kbarif and rabi crops yielded fairly well. Rice would have yielded still better if the late rains had not hold off rather too early. Khándesh gave a good outturn of kharif crops. But in the other districts of the Deccan and the Karnatak, these crons, especially those in the eastern talukas, sutfered from doficiency of rain in July and August, which reduced their outturn below the normal. Tho rabi crops in the whole of the North Deccan and Gujarát felt the effocts of tho early cessation of rali rains and yielded a moderate outturn. In Sind the low inundation and scanty rainfall reduced the outturn of all crops.
91. Fruit Trees.-In the Presidency Proper tho numbers of rannoo, jack and palms returned, decreased perecptibly, whilo tamarind and coconnut trees increased to a small extent. Mango and date-palm are the only trecs of importance in sind, and both of them increased. The cnumeration of trecs is to be taken as a rough estimate only, and it is only raluable as scrying to show the distribution of trees. Trees in forest or in villago sites are not included in this enumeration.
B 2190-14

## Nomber of Fruit Trees.

1000 omitted).

| No. | Province. . | Mango. | Tamarind. | Jack. | Cocoonut, | Toddy.palm. | Date-palm. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{r} 1 \\ 2 \\ 3 \\ 3 \end{array}$ |  |  | 125 | 4 | 7 | 205 | 504 |
|  | Gujarát ... $\quad \cdots \quad .$. | - ${ }_{931}^{564}$ | 125 74 | 12 | 13 | 1 | 160 |
|  | Deccan ... $\quad .$. | 931 393 | 113 | 23 | 73 |  | 951 |
|  |  | 561 | 45 | 178 | 1,835 | 96 | 12 |
|  | Total for the \{ 1898-99. | 2,449 | 357 | 217 | 1,928 | 302 | 1,627 |
|  | Presidency. 1897-98. | 2,463 | 355 | 267 | 1,926 | 342 | 1,693 |
|  |  | -14 | +2 | -50 | +2 | -40 | -66 |
|  | Sind... $\quad . .\left\{\begin{array}{l}1898.99 \\ 1897-98\end{array}\right.$. | $\begin{aligned} & 2222 \\ & 214 \end{aligned}$ | $\ldots$ | ... | 2 | ... | 162 152 |
|  |  | +8 | ... | $\cdots$ | +1 | ... | +10 |
|  | Grand Total . $\left\{\begin{array}{l}1898-99 \\ 1897-98\end{array}\right.$ | $\begin{aligned} & 2,671 \\ & 2,677 \end{aligned}$ | $\begin{aligned} & 357 \\ & 355 \end{aligned}$ | 217 | $\begin{aligned} & 1,930 \\ & 1,927 \end{aligned}$ | $\begin{aligned} & 302 \\ & 342 \end{aligned}$ | 1,789 1,845 |
|  |  | -6 | +2 | '-50 | +3 | -40 | -56 |

The enumeration includes an estimate of trees of special local value in particular districts as given in the subjoined table:- ।

Trees of special local importance for 1898-93.

| Trees and Districta. | Number: | Trees and Districto. | Namber. |
| :---: | :---: | :---: | :---: |
| 1.-Mowra (Bassia latifolia). |  | 5.-Fig (Ficus carica). |  |
| Kaira | 144,714 |  |  |
| Panch Maháls ... ... | 115,946 |  |  |
| Surat ... ... ... | 1,792 | Poona ... ... | 82,054 |
| Khándesh... ... ... | 43,293 | Násik ... ... | 3,516 |
| Násik ... ... ... | 14,484 | Ahmednagar ... | 4,062 |
| Broach ... , ... ... | 2,414 | Shikarpur ... ... ... | 1,467 |
|  |  | Hyderabad ... ... ... | 779 |
| 2.-Betelnut (Areca catechu). |  | Belgaum... ... ... ... | 225 |
| Kánara ... | 9,014,121 |  |  |
| Dhárwár ... ... ... ... | 151,016 | 6.-Vine (Vitis vinifera). |  |
| Ratnágiri... ... ... ... | 199,067. |  |  |
| Kolába ... ... | 23,187 |  |  |
| Thána ... ... | 4,008 | Násik ... ... ... | 65,305 |
| $\begin{aligned} & \text { 3.-Ráyan (Mimusops } \\ & \text { hexandra). } \end{aligned}$ |  | Poona ... ... ... ... | 63,900 |
|  |  | Ahmednagar ... ... -• | 8,804 |
|  |  | Shikarpur ... ... .. | 32,209 |
| Kaira <br> Panch Maháls <br> Broach <br> 4.-Kashewnut (Anacardium occidentale). | 79,729 | Khandesh . ${ }^{\text {. }}$ | 1,103 |
|  | 3559 | Upper Sind Frontier $\quad .$. | 345 |
|  | 2,9,74 |  | 570 |
|  |  | 7.-Kokum (Garcinia Indica). |  |
| Kanara . ${ }^{\text {a }}$ | 105.487 |  |  |
| Ratnágiri | 26,023 |  |  |
| Thúna .. | 5,201 | Ratnágiri . ... | 2,622 |

## Return No. IV-Irrigation.

92. The net irrigated area in the year under report amounted to 3.9 por cent. of the net cropped area in tho Presidency Proper and 81.3 per cont. in Sind, as against 4 and 76 per cent., respectively, last year.

The variations under the principal sub-hcids are shown below :-
Irvigated Area.


Note.-The difforence botween totals $A$ and $B$ is due to the inclusion in the latter of the arce cropped more than once under irrigation.

The total area irrigated decreased by 29,000 acres, or 3 per cent., in the Pro-
 sidency Proper. The decroaso occurred mostly undor canals and wells. The chicf variations in the areas irrigated from differcnt sources are shown in the marginal table. The canal irrigation slows considerablo decreaso in Poona and Nasik. In the former the scason was favourable and canal water was not resorted to; in the latter the decreaso is reported to bo the result of correction in the classification of area. Last ycar, arca which should havo been included under tho lhead "Irrigated from other sources" was included under "Canals." 1 large area under wheat appears to have led to inercased demand for water from tanks and wells in Kaira, and insufficiency of early rain had a similar result in Dhírwír and Sholápur. The reduction in the arca irrigated from wells is partly nttributed to good rainfall, but it may also be a slrinkago in contrast with the previous ycar, whon well irrigation was resorted to on a large scale on account of partial failure of rain. The incroase in Násik is explainod by tho correction of recoistration noticed above.

In the Presidency Proper the area of irrigated crops decreased from $1,084,000$ to $1,059,000$ acros, i.e., by 25,000 acres or $2 \cdot 3$ per cent. The decrease occurs especially under "other cereals and pulses," wheat, rice and sugarcane show increase which is explainable by the deficiency of late rains. In Sind the irrigated area as well as the irrigated crops decreased 14 per cent. on account of low inundation.

Return No. V.-Agricultural Stock.
93. The following table shows the result of the enumeration of the principal heads of agricultural resources in the Presidency. These statistics are not yet supplied by Sind :-

> Agricultural Stock.

| Details. | Presidinor Propbr. |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Yumber (000 omitted). |  | $\begin{gathered} \text { Increase } \\ (+) \\ \text { per cent. } \end{gathered}$ | $\begin{aligned} & \text { Decrease } \\ & \underset{\text { per cent. }}{\text { Cent. }} \end{aligned}$ |
|  | 1897-98. | 1898-99. |  |  |
| Plough Cattle ... | 2,965 | 2,947 | ...... | -0.6 |
| Breeding Bulls ... | 16 | 16 | ...... | ... |
| Cattle for other purposes | 116 | 116 | $\cdots$ | ... |
| Milch Cattle ... | 2,444 | 2,531 | + $3 \cdot 5$ | ...... • |
| Young Stock ... | 1,835 | 2,067 | $+12.6$ | ...... |
| Total, Cattle ' ... | 7,376 | 7,677 | + 4.0 | ...... |
| Horses and Ponies | 122 | 124 | + 1.6 | ..... |
| Sheep ... | 1,507 | 1,561 | + 3.6 | ...... |
| Goats ... | 1,675 | 1,832 | $+9 \cdot 4$ | -.... |
| Ploughs ... ... ... | 1,014 | 1,037 | $\cdots$ | -0.6 |
| Carts $\quad . .9$... ${ }^{\text {c- }}$ | 514 | 514. | ...... | ...... |

The district variations are noted below : -


Cattle.-The aggregate number of all kinds of cattle increased by 301,000 or 4 per cent., the total reaching $7,677,000$. This number, large as it is, is still much below the figures of $1804-95$ and $1895-96$, when the number was about $8 \frac{1}{2}$ nillions. The deficiency exists mainly in the. Deccan and the Karnatak. It is satisfactory to note that during the year under report the increase occurred under milch cattle and young stock, and the increase appears to be very general. It is most marked in the Panch Maháls, Khándesh, Nasik, Ahmednagar, Poona, Belgaum, Bijápur and Dhárwir. It is attributed to the abundance of fodder and the new purchases by the cultivators helped by tagái advances. Disease was also markedly absent. Plough cattle decreased a fraction below last year.

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$$

Shecp and Goats.-Sheep show an increase of about $3 \cdot 1,000$ or $3 \cdot 6$ per cent. Goats have also increased from $1,675,000$ to $1, \$ 32,000$ or $9 \cdot 4$ per cent. The increase under both the heads is general and is partly due to breeding and fresh purchases and partly to immigration. Tho exceptional decrease in Sholápur is not explained. Under goats there is a perceptiblo decrease in Kaira and Dhírwar. In the forner it is explained by migration. In the latter the decrease is remarkable, but the reporting officer has no explanation to offer. The emumeration of these animals, which are usually roving herds, must be taken as appor. imate.

Horses and Ponies.-Increase 2,000 or 1.G per cent. noticeably in Ahmednagar and Bijápur ( $+1,000$ each).

## Return No. VII.-Watersupply.

94. The return is a quinquennial one and will re-appear in 1001-1012.

> B.-PRICES.
05. Price Inspectors.-Restrictions imposed on account of plagne prevent. ed the inspection of 3 out of the 59 stations, viz., Sirúr, Sisvad and Kolhipur.

The cost incurred and the number of days actually deroted to inspretion are given in the following statement and are contrasted with the figntes for the previous year:-

| , | Year. |  | Salary. | Travelling allowance. | Total. | Deyn of Ineprection. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Rs. | Re. | Re. | No. |
| 1897-98 | . 0 | ... | 3,340 | 948 | 4,283 | 135 |
| 1898-99 | "•* | ... | 2,980 | 1,032 | 4,072 | 18: |

96. Retail Prices Current.-The inspection brought to light tho following irregularities. In Bijápur and Ahmednagar the registration work was performed rather carelessly; numerous corrections were made in the register and left unattested by the supervising officer. The Inspectors noticed that in some stations prices were omitted for articles which were regularly sold in the markets, and in some they were registered when the articles were not procurable. In Bombay the price of superior instead of the average quality of rice was quoted. This mistake was found in the case of many articles in $\Lambda$ hmadabad and liajkot. Godhra returned the same price continuously for ten months and took no notice of the fluctuations of the market. Karachi reported the price of the hides of bullocks and the skins of goat instead of the average price of bides and skins of different kinds. Officers in charge of the price registration at Kaira, llajkot, Godhra and Jacobabad did not take the prescribed 5 per cent. test. In l'oona the City Magistrate took this test by summoning the dealers instead of personally inquiring in the market. Numerous errors were detected in calculatin:r the prices in Bijápur, Ahmednagar, Málegaon, Sat́ára aṇd Dhulia. All these sti:tions except Dhulia failed to record causes of marked variations in pricrs. In Ahmadabad, Kaira, Godhra and Deesa in Gujarát and at Jacobabad and Karáchi in Sind the explanations were noted by guess work on the day of preparing the price returns. For instance, the variations in prices in Ahmedabad wero attributed to the fluctuations of the market while they were found to be due to incorrect quotations.
97. Táluka Form No. 38.-These forms wero inspected in all tho district head-quarter stations visited by the Price Inspectors. The inaccuracios noticed show that due attention was not paid to the rules contained in the Manual of Revenue Accounts. In Dhulia the form was not kept as prescribed by the rules. The Mámledárs of Ahmadabad, Godhra, Surat and Thána did not take any test of the jantri. In the first-named station the price of tho new produco was not distinguished from that of the old; the prices were not ascertained on the prescribed dates, the Circle Inspector reported the prices in Indian maunde

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\text { в } 21: 0-15
$$

instead of in local maunds, the price of 100 bundles of fodder (karbi) was quoted for an Indian maund, and in the case of tobacco cut leaves were quoted in lieu of cured leaves tied in bundles. In Surat the prices of rice and salt for Ránder given in the report submitted by the Blág Kárkun did not agree with those recorded in the form.

A new Taluka Form has been sanctioned under Government Resolution No. 7110, dated 7h October 1899, Revenue Department, for introduction from January 1900.
98. Fortnightly Return of Retail Prices.-In this return some errors were detected in Sitára, Málegaon and Ahmednagar in the conversion of local into standard seers.

A return (pages xliv-xlv) is appended giving for all the districts of the Presidency and the several cantonments visited by the Inspectors the annual average retail prices of the principal staple food-grains and articles of - ordinary consumption for the year under report.
99. Return of Wholesale Prices.-These returns were examined concurrently with the returns of retail prices and were found to be compiled in a satisfactory manner in all the 10 fixed stations.

## C.-CROP EXPERIMENTS.

100. The number of esperiments conducted during 1898-99 amounted, as shown in the margin, to 98 as against 127 in the previous year. Of these, 37

Rice 22 ; wheat 13 ; jowári 11 ; bájri 6 ; nágdi 7; kodra 5; gram 10; sugarcane 5 ; sesamam 5 ; linseed 7; groundnut 3 ; other crops 4 . were in the Northern Division, 45 in the Central Division and 16 in the Southern Division. No experiments bave been reported from Belgaum, Dhárwár and Koliba districts owiug to the officers being placed on plague duty. In several other districts also the work suffered more or less from the same cause.

## D.-TRADE IN WHEAT, COTTON AND OIL.SEEDS AND FORECASTS OF THOSE CROPS.

101. The following statement compares exports by sea of wheat, cotton and oil-seeds from the Port of Bombay to countries abroad during the seven years ending with the year under report :-

Figures in thousands of cwt.

| Crop. |  |  | 1892-93. | 1893-94. | 1894-95. | 1895-96. | I896.97. | 1897 -98. | 3898-93. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Wheat |  |  | 8,176 | 4,699 | 1,043 | 2,799 | 1,158 | 377 | 6,485 |
| Cotton. |  |  | 3,862 | 3,711 | 2,323 | 3,831 | 3,843 | 2,669 | 3,972 |
| Linseed... | - ${ }^{\text {- }}$ | ... | 3,719 | 4,767 | 4,542 | 2,705 | 2,468 | 1,412 | 2,802 |
| Rapeseed | ... | ... | 2,165 | 4,353 | 3,072 | 1,733 | 1,350 | 2,156 | 2,353 |
| Sesame ... | ... |  | 1,467 | 1,238 | 1,259 | 1,000 | 667 | 1,419 | 2,254 |
| Groundnut | ... |  | 1,160 | 1,098 | 1,598 | 793 | 233 | 19 | 75 |

- It will be seen that the exports of wheat were the largest since 1893.94: Large exports by sea were called for by a rise of prices in London, occasioned by a belief that the American supply would be deficient and that the supplies from Russia and India would not be large. The exports were chiefly made to France, the United Kingdom and Italy.'

The supplies chiefly came from within the Presidency and from the NorthWest Provinces and Oudh, the Central Provinces and the Punjab, in all of which the crop was excellent.

The exports of cotton were only smaller than those of 1891-92. The imports chiefly came from the Bombay Presidency and the Berars, where the cultivation was extended and the harvest good. The export of cotton to the United Kingdom shows symptoms of gradual decline, due partly to the fact that the Indian mills now manufacture much of the coarse yarn and cloth for
which the Indian short-stapled cotton was required, aud partly to the abuudanco of cheap American cotton which European millowners find more economical. For the present, however, the Indian cotton trade has gained in the east what it has lost in the west. Japan has become the largest consumer of Indian cotton.

The season for linseed, rapeseed and sesamum was favourable, and large stocks came in from almost all provinces. The exports were larger than during some preceding years and were chiefly made to France, Bolgium and Itals. The trade in groundnut was insignificaut.

The official forecasts were published as usual. The forecast areas of cotton and wheat approximated to the actual area. But the divergeuce shown by the oil-seeds was rather wide and, as explained in previous reports, is attributed to the usual difficulty of ascertaining the actual area under these seeds, which aro mostly grown as row crops.

## E-AGRICULTURAL LEDGERS.

102. An agricultural bulletin by Mr. Mollison on the cultivation of betelpalm, cardamoms and pepper in Kanara and the manures used in the gardeus is under publication.

## CHAPTER VIII.

FINAL.
103. In the preparation of this report much assistance has been given by Messrs. Nagarji, Gokhle and Bhardi under the general supervision of Mr. Yashwantrao, Acting Assistant.

I have the honour to be,<br>Sir,<br>Your most obedient Servant,<br>W. P. SYMONDS,<br>Acting Survey Commissioner and Director, Land Records and Agriculture.

STATISTICS.
RAINFALL
(CHAPTER IV).

## EXPLANATORY REMARKS.

## Rain Periods and their Dates.

Early Rains ... ... ... ... ... ...lst January-10th April.
Ante-Monsoon-
11th April to 4th June... $\left\{\begin{array}{lll}\text { A }^{\prime} \text { shvini } & \text {... } & \text {...11th April-24th April. } \\ \text { Bharani } & \text {.. } & \text {...25th April-8th May. } \\ \text { Krittika } & \text {.. } & \ldots 9 \text { th May-22nd May. } \\ \text { Rohini } & \text {... } & \text {...23rd May-4th June. }\end{array}\right.$
Monsoon-Kharif-
5th June to 14th August.$\left\{\begin{array}{lll}\text { Mrig } & \ldots . & \text {...5th June-19th June. } \\ A^{\prime} \text { rdra } & \ldots . & \text {...20th June-3rd July. } \\ \text { Punarvasu } & . . & \text {..4th July-17th July. } \\ \text { Pushya } & \ldots . & \text {..18th July-31st July. } \\ A^{\prime} \text { shlesha } & . . . & \text {...1st August-14th August. }\end{array}\right.$
Monsoón-Rabi-
15th August to 21st Oct. . $\left\{\begin{array}{lll}\text { Magha } & \ldots & \text {...15th August-27th August. } \\ \text { Purra } & \ldots & \text {..28th August-10th September. } \\ \text { Uttara } & \ldots & \text {..11th September-24th September. } \\ \text { Hast } & \ldots & \text {..25th September-7th October. } \\ \text { Chitra } & \ldots & \text {...8th October-21st October. }\end{array}\right.$
Late Rains-
22nd Oct. to 30th Nov.... $\left\{\begin{array}{lll}\text { Sváti } & \text {... } & \text {...22nd October-3rd November. } \\ \text { Vishákha } \\ \text { Anuradha } & \text {... } & \text {...4th November-17th November. } \\ \text {...18th November-30th November. }\end{array}\right.$
December.

The average given in the tables is that for eleven years ending 1837, except for very few stations. The rainy days are compared with last year only.

The anna valuation given in the remarks is on the basis of 12 annas representing an average crop.

Synopsis of Rainfall Summary, 1898-90.


West Kha＇rdesh， 1898.

| Rain Periode． | Dhuils． |  | Kmpalner． |  | Nandurbar． |  | Navapur． |  | Talods． |  | Shahada． |  | Shirpur． |  | Sindkheda． |  | Amalner． |  | Parola， |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall． |  | Fall． |  | Fall． | $\begin{aligned} & \text { 㤙 } \\ & \text { 号 } \\ & \text { 公 } \\ & \text { 品 } \end{aligned}$ | Fall． |  | Fall． | 离 | Fall． |  | Fall． |  | Fall． |  | Fall． | 安 | Fall． | 亥 |
| ， | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  |
| Early Raion ．．．．． | 0.25 | 1 | 0.55 | 1 | 0.52 | 1 | 1－83 | 2 | 0.02 | 1 | 0.27 | 1 | 0.62 | 1 | 164 | 1 | 0.27 | 1 | 0.50 | 1 |
| Ante－Monzoon ， | $\cdots$ | $\cdots$ | $\cdots$ | $\cdots$ | ．．． | $\cdots$ | ．． | $\cdots$ | ＊－ | ＂ | 0.89 | 2 | ．．． | ．．． | $\cdots$ | $\cdots$ | $\cdots$ | $\cdots$ | $\cdots$ | $\because$ |
| Mortoon－Kharit ．．． | 11：81 | 20 | 14．50 | 25 | 16.07 | 30 | $38 \cdot 02$ | 43 | 18．43 | 20 | 8.94 | 23 | 13.23 | 21 | 10.56 | 20 | 21.07 | 19 | 11.31 | 22 |
| Monsoon－Rabi＇．．． | $8 \cdot 17$ | 14 | $7 \cdot 43$ | 11 | $8 \cdot 36$ | 14 | 18．28 | 26 | 8.88 | 18 | 7.32 | 18 | 773 | 14 | 8.77 | 15 | $12 \cdot 16$ | 17 | 825 | 10 |
| Late Rains ．．．．．． | $0 \cdot 50$ | 1 | $0 \cdot 17$ | 1 | 0085 | 1 | $0 \cdot 14$ | 1 | $\cdots$ | $\cdots$ | $\cdots$ | ．．＊ | ＊＊ | ＂＊ | $\cdots$ | $\cdots$ | 0.09 | $\cdots$ | 0.25 | 1 |
| Total ．．． | 21.03 | 86 | 22＇45 | 38 | 23.80 | 46 | 69＇11 | 78 | 38.03 | 48 | 1711 | 43 | 21－43 | 38 | 18.87 | 36 | 23＇58 | 87 | 20.31 | 40 |
| Average ．．． | 28.22 | 34 | 20.90 | 81 | 28.98 | 50 | 42.84 | 68 | 93－08 | 4 | 27．40 | 44 | $28 \cdot 25$ | 48 | $20 \cdot 82$ | 48 | 25.67 | 40 | 30022 | 46 |

General characteristics．－A hilly and ragged tract，except where the wide black－soil plains extend on either side of the Tápti and ita tributaries．Rainfall very heavy in the Dángs．

Remarks．－The total rainfall of the year exceeded the normal in Navápar and Pimpalner；else－ where it was alightly below the avernge．The sowings generally commenced with Mrig rain，but a break following they were not completed until good rain came early in July．August rain，though not up to requirements，was seasonable and sutficient to sustain the crops．The slight deficiency was well made op by the good Uttara fall in September．For the kharif crops，therefore，the rain was well－distribnted．The rabi sowings were completed with the usual Hasta showers which practi－ cally closed the rainy season，for no rain fell afterwards．The kharif crops were generally up to the normal，and gave an outtarn estimated at 11 annas．The rabi saffered from the early cessation of rains and yiolded 8 and 9 annas of outtarn．

East Kha＇ndesh， 1898.

| Rain Periodr． | Chális gnon． |  | Pachors． |  | Bhad． caon． |  | Erandol． |  | Chopda． |  | Jalgaon． |  | Jamber． |  | Bhumaval． |  | Edalabad． |  | Yaval． |  | Raver． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall． | $\begin{aligned} & \text { 品 } \\ & \text { 鬲 } \\ & \text { 感 } \end{aligned}$ | Foll． |  | Fall． | $\begin{aligned} & \text { 品 } \\ & \text { 品 } \\ & \text { 点 } \\ & \text { 弟 } \end{aligned}$ | Fall． |  | Pall． | $\left\lvert\, \begin{aligned} & \text { 曾 } \\ & \text { 感 } \\ & \text { 品 } \end{aligned}\right.$ | Fall． |  | Fall． |  | Fall． | $\begin{aligned} & \text { 密 } \\ & \text { 空 } \\ & \text { 总 } \end{aligned}$ | Fall． |  | Fall． | 号 | Fall． | 安 |
| － | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  |
| Carly Rainc．．． | $0 \cdot 05$ | ＊＊＊ | 0.01 | ．．． | 0.17 | 1 | 0.07 | $\cdots$ | 0.38 | 1 |  | $\cdots$ | ＊＇ | $\cdots$ | $\cdots$ | $\cdots$ | ‥ | ．．． | $\cdots$ | ．．． | 0.14 | $\cdots$ |
| Aute．Monioon | － | $\cdots$ | 0.13 | 1 | 0.28 | 1 | 0.61 | 1 | $0 \cdot 52$ | 1 | 0.28 |  | － | ．．． | $0 \cdot 02$ | $\cdots$ | ．．． | $\cdots$ | 0.42 | 1 | 0.38 | 3 |
| Monseon－Eharif ． | 14.20 | 26 | 13.38 | 24 | $19 \cdot 41$ | 21 | 13.47 | 28 | 10．78 | 25 | 18.69 | 28 | 12．88 | 26 | 17．68 | 28 | 14．61 | 26 | 15＇98 | 28 | 14＊80 | 22 |
| Hontoon－Rabi | 13.05 | 17 | 10＇70 | is | $7 \cdot 67$ | 18 | 11.98 | 19 | 11.88 | 19 | $17 \cdot 43$ | 19 | $17 \cdot 4$ | 17 | 12．33 | 16 | 10091 | 15 | 1838 | 20 | 9.86 | 15 |
| Late Reine ．．． | 1＊68 | 1 | $\cdots$ | － | 0.03 | $\cdots$ | 0.03 | $\cdots$ | $\cdots$ | ．． |  | $\cdots$ | 0.67 | 1 | $\cdots$ | $\cdots$ | 0．05 | ．．． | $\cdots$ | $\cdots$ | ＊＊ | $\ldots$ |
| Total | 28.98 | 4 | 26．22 | 40 | 27．80 | 41 | 26.02 | 42 | 23．67 | 46 | 84．58 | 48 | 30．92 | 44 | 20：80 | 44 | 25.57 | 41 | 30＇78 | 49 | $25 \cdot 18$ | 40 |
| Avarage | 34－64 | 37 | 33＊48 | 48 | 31．85 | 40 | $22 \cdot 15$ | 49 | 28.82 | 45 | 32．86 | 44 | 32.62 | 42 | $20 \cdot 12$ | 45 | 28.81 | 39 | 26．36 | 39 | $27 \cdot 30$ | 86 |

General characteristics．－In the north，high hills of the Sátpadas．The southern and western portions are also hilly，bat the hills less high and continuous．Drainage by the Tapti，the Girna and the Purna．Rainfall larger than in the West Khándesh，bat less certain．

Remarks．－Rain generally below average except in two talakas where the increase was not very noticeable．As in West Khándesh the sowings were started in the first half of June；but being checked by the light fall of A＇rdra，were completed in July．The Augast rain falling with partial breaks was very beneficial to standing tharif orops．They flourfshed withont a check in September．The Hasta showers at the close of that month．were somewhat too heavy for the kharif

Na＇sik， 1898.


General characteristics．－The district is divisible iuto the Desh（or open country）nend the Dinge （near the Sahyídris with heavy rainfall and primitive cultivation）．The west portious of Nusik， Dindori and Igatpuri and the whole of Peint belong to the Dángs．

Remarks．－Number of raing days larger．The aggrogate rninfall，however，excceded the average in one or two talukas only．Elsewhere it was in defect．The monsonn opened timely in June，but the total fall of the $m$ onth was insafficient for full sowing．The July ruin，howerer， was sufficient and seasonable for the completion of the retarded sowings．In the wraturn talaka the kharif cropa bad farourable rains in Angust and September．Lint in central and oustern talukas they suffered from a deficient fall at tho close of Augast and wuuld have siclled poorly it they had not been saved by the timely and heavy fall of Uttara aud Hnsta in Scptember．Theso rains gave good moisture for rabi sowings，which wcre effected in time in the lirenk of Octobor． This break was，however，a prolonged one and was fullowed by light slowers in November and December at very long intervals．The rabi rains therefore were on the whole not up to the mark． This reduced the outturn of rabi crops in many places to 8 to 10 annas．The bharif crupa gave a better outtarn of 12 aunas and apwards．

Ahmednagar， 1898.

| Rala Periode． | 1 <br> Nagab． |  | $\begin{gathered} 2 \\ P_{A^{\prime}} \mathrm{BNBR} \end{gathered}$ |  | $\begin{gathered} 3 \\ \text { Shri- } \\ \text { GONDA } \end{gathered}$ |  | Karjat |  |  EEED． |  |  |  | $\left\|\begin{array}{c} 7 \\ \text { NapAsi. } \end{array}\right\|$ |  | $\begin{gathered} 8 \\ \text { RAGUBI. } \end{gathered}$ |  | Kopar． GAON． |  |  |  | $\begin{gathered} 11 \\ \operatorname{siot} \end{gathered}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall． |  | Fall． | $\begin{array}{\|l\|l} \text { 号 } \\ \text { 号 } \\ \hline \end{array}$ | Full． |  | Fall， |  | Fall． | $\begin{aligned} & \text { 亭 } \\ & \text { 曾 } \\ & \hline \end{aligned}$ | Fall． | $\begin{aligned} & \text { 音 } \\ & \text { 景 } \end{aligned}$ |  | 霷 |  | \％ | Fall | 㫛 | Fall． | 告 | Fall． | 5 8 8 8 |
|  | In． |  | In |  | $\mathrm{In}_{4}$ |  | In． |  | 1 l. |  | In |  | In． |  | In． |  | in． |  | 1. |  | 1 ta |  |
| Sarly Raint ．．． | 0.03 |  | 0.02 | $\cdots$ | $0 \cdot 28$ | 1 | 1：＇63 | $\cdots$ |  | $\cdots$ | 1.07 | 9 |  | 1 | $0 \cdot 68$ | ． | 0.02 | … | 029 | 1 | $\stackrel{0}{0}$ | 1 |
|  | ${ }_{5}{ }^{5} 98$ | $1^{2}$ | ${ }_{7} 720$ | 22 | $\because 68$ | $\cdots$ | br6b | 11 | 909 | 19 | 11.17 | 17 | ${ }^{-\cdots}$ | 21 | 914 | ， | 6．30 | ${ }^{14}$ | $2 \cdot 108$ | ， | 1.07 | 20 |
|  | ${ }^{8} 8.58$ | 18 | ${ }^{18} 9$ | 14 | 7.52 <br> 0.78 | 18 | 10.74 0.48 | 14 | 11198 <br> 031 | 18 |  | ${ }_{8}^{18}$ |  | 13 | UVE1 | 15 | $2 \cdot 21$ 0.60 0.0 | 13 |  | 4 | ${ }^{1 \% 8}$ | 1 |
| Late Rains ．．． | $0 \cdot 16$ | 1 | ${ }^{0} 85$ | － |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Total ．．． | 14：9 | 31 | $21 \cdot 4$ | 43 | $1{ }^{29} 15$ | 24 | $18 \cdot 49$ | 80 | 29.03 | d） | 1973 |  | 1200 | 30 | 1910 | 20 | 18 | 33 | 123 | 20 | 18 | ＊ |
| Average ．．． | 2300 | 30 | 25.68 | 32 | 20.43 | 27 | 22.08 | 23 | 20：3 | 41 | 28.00 |  | $\left.\right\|^{24}$ \％ | 36 | 22：86 | 54 | $2 \cdot 7$ | 30 | 2184 | 29 | 23.76 | 34 |

General characteristics．－（1）Desh—Godáveri valley（talukas 6 to 9）：rich alluvial plaius prow－ ing mach wheat．Rainfall very nucortain．Bhima and Ghor valleg（talakas 3 and 4）alluvial． but less fertile．Raiufall more capricions．Good jear exceptional．Tálakas $1,2,5$ and 10 lie botween these valleys．slternation of bare hill and treeless plain with occasional fertilo woll－ wooded tracts．Rain more regalar．（2）Dángs－Half Akola has very heary rain，hulf abuts on the Desh．The record shows the fall of the plain portion．

Remarks．－The total fall was mach below the averago，thongh the number of raing dayu was larger，indicating a light full over a greater part of the season．The land prefared undor ante－nonsoon showers was ready to reccive Lharif sowing in June．Dat the monsoon opened with a light fall in that month．Only partial sowings were effected．Joly rain permithd aditional sowings，bat being short of the reqnirements some aren was left nosown．On thrse supervined anotber deficiency in Augast，which gave only light and occabional showers．Kharif cr：ps hegan to wither and rabi sowing was delayed．A change set in in Septembor，when rain fill in excess of the average，saving the tharif crops and providing moistare for rabi bowing．But this proved to be a short spell of good rain．For October again gave light and 1 artial showers only fur the first fevr days．The standing kharif crops again saffered．The Chitia and Swáti blowery in Octobor did not fall．The rabi crops，therefore，saffered from deficiency of moistarc．Thoy has bomo showors in November and December，but they were either too lisht or antimcly to give material help．The kharif outtorn estimated at 10 annas only in one talaka， 6 to 8 annas in sis， 3 to 4 annas in two and only one anna in Karjat；rali gield 10 annes in $t$ wo táloleas and 5 to 8 auras iu the rest．Cotton estimates aboat 6 to 8 anda．
－2130－2 ap

Poona. 1898.


General charucteristics.-The district varies from a heavy certain rainfall to a most scan capricious one. Sare rain is enjoyed by the west portions of Janar, Khed Haveli aud all of Máral. A modtrate hut regalar rainfall characterices the central belt, whilo the Bhimthadi and Indápur tálukas are uncertain and irregular like tiee adjoining tálukas of Sholápur.

Remarks.-The rain generally under average excupt in two Mával (western) tánkas. Antemonsoon shiwers favourable for prep arati.nn of land. The mousoon commenced in the second we $\theta$ k of June. In the west rn portion of the aistrict the fall of the month wns sufficient and reasonable for kbarif suring. In the subsequent months the klarif crops had beneficial rains and developid under favourable circumstances till they were , eared. But in the fastern ( $D$ eshi) talukas the rain was deficient from the commencement. Buth July and August months closed with a great want of . rain. In places the klarif crops mere reported to have lailed. In September, bowever, a most opporture and useful downpour if ain changed the sitation. Ail survivitg kharif cropa did well at the end of that month. Octoher rain tio, though limited to the Hasta period, was heavy in the Drshi portion of the district. The break of Chitra that followed was useful for harvesting kbarif crops and the sowing of rabi. The Vishakha showers useful to the rabi crops were not safficiently heavy. In D.ceember the shnwers were still lighter and more scattered. The moisture of the rabi crops was deficient, which redaced the outturn ( 6 to 8 annas). The estimates for the kbarif crops were 10 to 12 aunas in the Maral, 4 to 8 annas in the Deshi tálakas. In some of them the crops failed.

Shola'pur. 1898.

| Raln Periods. | 8hola'puz. |  | B4'sal |  | ми'dia. |  | Eanmaja. |  | Pandiampiz. |  | SA'maola. |  | Ma'loinal |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall | Rainy days. | Fall. | Rainy days. | Fall. | Rainy days. | Fall. | $\left\|\begin{array}{l} \text { Painy } \\ \text { dnye. } \end{array}\right\|$ | Fall. | Rainy days. | Fall. | Raing days. | Fall. | Roiny days. |
|  | In. |  | In. |  | In. |  | In. |  | In. |  | In. |  | In. |  |
| Early Raina ... ... ... | 0.32 | 1 | 0.61 | 2 | 0.52 | 2 | 0.19 | ... | 0.65 | 2 | 0.81 | 2 | 0.28 | 1 |
| Anto-Monaoon ... .. ... | 0.81 | 1 | $0 \cdot 10$ | 1 | 0.41 | 2 | $1 \cdot 50$ | 8 | $0 \cdot 89$ | $\checkmark$ | 1.14 | 4 | 1.89 |  |
| Moneoon-Kharif ... ... | 1489 | 18 | $8 \cdot 62$ | 17 | 912 | 18 | $8 \cdot 28$ | 12 | $11 \cdot 13$ | 12 | $8 \cdot 10$ | 10 | 3.98 | 11 |
| Monmon-Rabl ... ... ... | 18.51 | 19 | $11 \cdot 11$ | 18 | 19.19 | 17 | 12.72 | 15 | 11.77 | 18 | 879 | 20 | 13.27 | 15 |
| Late Rains ... ... | 0.48 | 1 | $2 \cdot 10$ | 8 | 0.75 | 1 | 0.38 | 2 | 170 | 9 | 8.00 | 3 | 0.70 | 2 |
| Total ... | 84.85 | 40 | 23.84 | 41 | 29.99 | 38 | 22.89 | 82 | 28.04 | 40 | $18 \cdot 89$ | 39 | 19.60 | ${ }^{3}$ |
| Avorage ... | 28.68 | 87 | 38.72 | 41 | 29.86 | 45 | $26 \cdot 10$ | 34 | 27.04 | 42 | $22 \cdot 93$ | 93 | $23 \cdot 93$ | 33 |

General characteristics.-The ivol ated taluka ol Barsi is the richest, and has the surest rain; but the rainfall is scanty all over the district, and very capricions.

Remarks.-Rrinfall nbove average at the head quarters; els?where approximating to the normal fall. Preparatury ante-monsoon showers light. Monsoon commencod timely in Jane, but rain not sufficient for general sowing till the middle of July. In places the kbarif area remained unsown. In A:ggust the rain was partial and very light and kharif crops began to wither. Relief, though late, came with the Parva and Uttara downpours in September. These with the Hasta showers benefited the kharif crops and enabled the rabi to be sown to a large extent. But Octoher gave a long break and it has followed by only very light fhowers of Visbakba in Novemker. The total rabi rain was therefore deficient. The season on the whole was poor for kbarif croos, which mostly fielded from 4 to 6 annas; in places only 3 annas. The rabi jowari yielded from 8 to 12 annas. , In places wheat and gram were damaged by rats, yielding 2 to 4 annas.

Sa＇ta＇ra， 1898.

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[b]{2}{*}{Rain Periods．} \& \multicolumn{2}{|l|}{Atara．} \& \multicolumn{2}{|l|}{EORE． GAOW，} \& \multicolumn{2}{|l|}{WAI．} \& \multicolumn{2}{|l|}{Khaf． DAlA．} \& \multicolumn{2}{|l|}{Medera．} \& \multicolumn{2}{|l|}{MAL－ COIM－ PRTE．} \& \multicolumn{2}{|l|}{Pátan．} \& \multicolumn{2}{|l|}{Kasid．} \& \multicolumn{2}{|l|}{$$
\begin{aligned}
& \text { Valvi } \\
& \text { (laLAM- } \\
& \text { PUK). }
\end{aligned}
$$} \& \multicolumn{2}{|l|}{Nhirila．} \& \multicolumn{2}{|l|}{Dini Tide．} \& \multicolumn{2}{|l|}{Vantsis} \& \multicolumn{2}{|l|}{Vita．} \& \multicolumn{2}{|l|}{TAs． oAOX．} <br>
\hline \& Fall． \&  \& Fall． \&  \& Fall． \&  \& Fall \&  \& Fill． \&  \& Fsill． \& $$
\begin{aligned}
& \text { 关 } \\
& \text { 合 } \\
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\end{aligned}
$$ \& Fall． \& $$
\begin{aligned}
& \dot{C} \\
& \text { 易 } \\
& \underline{E} \\
& \underset{\Xi}{E}
\end{aligned}
$$ \& Fall． \&  \& Fall． \& $$
\begin{aligned}
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& \text { e } \\
& \dot{E} \\
& \dot{d}
\end{aligned}
$$ \& Fall． \& $$
\begin{aligned}
& \text { 它 } \\
& \text { 号 } \\
& \frac{3}{3}
\end{aligned}
$$ \& Fall． \& $$
\begin{aligned}
& \dot{4} \\
& \dot{3} \\
& \underset{~}{3} \\
& \underline{3}
\end{aligned}
$$ \& Fall． \& $$
\begin{aligned}
& \dot{4} \\
& \stackrel{y}{0} \\
& \stackrel{3}{3}
\end{aligned}
$$ \& Fall． \& ¢ \& Fnll \& a

0
0 <br>
\hline \& \& \& In． \& \& Jn． \& \& In． \& \& In． \& \& In． \& \& In． \& \& In． \& \& In． \& \& $\mathrm{In}_{4}$ \& \& In． \& \& In． \& \& In． \& \& In \& <br>

\hline $$
\begin{array}{ll}
\text { Early Rainy } & \ldots \\
\text { Anto-Monsoon }
\end{array}
$$ \& 0.58

8.95 \& $$
\begin{array}{r}
2 \\
9
\end{array}
$$ \& 0.65

$1.7 \times$ \& $$
\begin{aligned}
& 2 \\
& 0
\end{aligned}
$$ \& 0.29

204 \& 1
8 \&  \& 0 \& 1.30

3.73 \& 1 \& \[
$$
\begin{aligned}
& 0.54 \\
& 2 \cdot 4
\end{aligned}
$$

\] \& 7 \& | 1.28 |
| :---: |
| 8.85 | \& 1 \& 1.23 \& 8 \& 1 ms \& 4 \& $8{ }_{8}^{88}$ \& 1 \& 0.18 \& 1 \& 124 \& 9 \& 0－40 \& \& 2113 \& 1 <br>

\hline Monsoon－Kharit ．．． \& $20^{\circ} 80$ \& 44 \& $1+\gtrless 2$ \& 41 \& 19.60 \& 30 \& ${ }_{8} 56$ \& ${ }_{18}$ \& 173
6.913 \& ${ }_{6}^{8}$ \&  \& ${ }_{68}^{7}$ \& 9．85
41.99 \& ${ }_{58} 6$ \& 2
1.47
1.11 \& ${ }^{8}$ \& 411 \& 3：1 \& ${ }_{0}^{7} 8 \mathrm{Al}$ \& 11 \& 89.4 \& ${ }^{1}$ \& 1.17 \& 7 \& 111 \& 4 \& $8: 14$ \& － <br>
\hline Monsonn－Rabi ．．． \& 10.41 \& 21 \& 9＊56 \& 13 \& ${ }_{9} \cdot 61$ \& 19 \& ${ }_{8} 68$ \& 1. \& 16.07 \& 27 \& $77 \times 10$ \& 47 \& 1118 \& 58
33 \& 1.11
7
0 \& \& \& 3＇1 \& 9.1
0.31
0.3 \& ${ }_{14}^{4}$ \& 493
$0+0$ \& ${ }^{9} 10$ \& 4.17
$N$ \& 14 \& $n 02$
$8 . a l$ \& 10 \& ${ }^{\text {Pran}}$ \& 9 <br>
\hline Late Raina ．．． \& 0.25 \& 2 \& 0.05 \& ．．． \& － 12 \& 1 \&  \& 2 \& 2.81 \& $\lambda$ \& 0.70 \& 2 \& 0 0， \& 8 \& $0 \cdot 78$ \& 17 \& 6．70 \& … \& O．s \& 1 \& 0.4
078 \& ${ }_{1}^{16}$ \& N 20 \& 14 \& 8.11
0.4 \& 10 \& $11 \%$ \& 13 <br>
\hline Total ．．． \& 35.07 \& 78 \& 26．89 \& 62 \& 35．60 \& 60 \& 23.81 \& $4)$ \& 89.35 \& ${ }^{03}$ \& 290.62 \& 138 \& 62．50 \& PS \& 20.80 \& 61 \& 24.47 \& B4 \& 1013 \& 78 \& 17：1 \& 23 \& 17.91 \& 34 \& 1403 \& 4 \& ， 10.15 \& $\therefore 2$ <br>
\hline Average ．．． \& 44.63 \& 72 \& 80＇79 \& 86 \& $4 \cdot 19$ \& 82 \& $22 \cdot 43$ \& 81 \& 82•20 \& 86 \& 20） 87 \& 138 \& 7410 \& 80 \& 38．77 \& 87 \& 28.11 \& 04 \& 11.42 \& 75 \& 23：38 \& 11 \& 23.14 \& 30 \& 20.65 \& $\cdots$ \& 20 Lin \& 4 <br>
\hline
\end{tabular}

General churacteristics．－Western Belt－Parts of Javili，Pátan，Wai，Saitaina，and Vailon hills． Regular and henvy rainfull．Ceutral Bhlt－Rast portinus of above and all Koregaun and Kinrad． Rich，well－watered valleys．Eastern Belt－The rest chiefly a waving plain aud of phor hand． Uncertain rainfall．Bat suluth purtion of Tágain rich．well－wooded plaine．

Remarks．－Rainfall above average at Shirula petha and Tasgava；elsewhere genernlly below the average．The ante－monsoon showers were heavs encugh for preparation of innd．In the western portion of the district the monsoon opened timely in Jave with sulficirt rain for kharif sou ing． Here the sabsequent rain ill the end of the kharif period was sasumable aud salficient．The crona developed without any distress．But in the eastern talakis the son ing rain wat beant．Thu fuil of July again consisted of drizzling and scattered sbowers－quite insullicient for complete sowing． August rain was equally meagre．The kharif crops at the end of the month begun to wither． The needed relief came in time from the fall of Utura and Lasta in Scptember，which were havy in all parts．October rain being moderate wan beneficial to the ripe bharif crups and uasful for the completion of rubi sowing．The rain which fell in November and December was tuo light to givo safficient moisture for the rabi crops．They therefore，on an nverage，gave an outturn of 10 aumas． The kharif onttorn varied from 10 to $1: 2$ annas Groundnat is said to have yiolded only ${ }^{0}$ annas．

Belgaum， 1898.

| Rain Periode． |  |  |  |  | $\begin{gathered} K_{H \& N} \\ \text { PUK. } \end{gathered}$ |  | $\begin{aligned} & \text { SAMP- } \\ & \text { GAOR. } \end{aligned}$ |  | $\begin{aligned} & \text { Sadn- } \\ & \text { Datti. } \end{aligned}$ |  | Murood． |  | Goris． |  | Curzodi． |  | Hoxeri． |  | Atilis． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall． | v | Fall． | 䓣 | Fall． |  | Fall． | 京 | Fall． | 䎟 | Fall． | 曾 | Fall． | 宮 | Pull． | $\begin{aligned} & \dot{6} \\ & \vdots \\ & \vdots \\ & \vdots \\ & \vdots \\ & \underline{L} \\ & \hline \end{aligned}$ | Fall． | 兑 | Fall． | 或 |
|  | Yn． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | Ja． |  | －In． |  |
| Earily Raina ．．． | ．．．）1．A6 |  | 1 mm | 8 | 0.88 | ${ }^{8}$ | 0．80） | 8 | 0.78 | ${ }^{2}$ | $0 \cdot \mathrm{Sa}$ |  | $0 \cdot 70$ | 1 | 0 O1 | ${ }^{3}$ | $0 \cdot 10$ | 1 |  |  |
| Ante Monpon | … 8.8 .45 | ${ }^{17}$ | ${ }^{8} 8.74$ | ${ }_{\text {che }}^{13}$ | $8^{8.8}$ | ${ }_{68}^{11}$ | 7\％ $\begin{gathered}787 \\ 15.43\end{gathered}$ | ${ }_{20}^{15}$ | 5．988 | 18 | ${ }_{\text {c }}^{6.78}$ | 12 | 8 ${ }^{119}$ | 11 | － | 12 | 14．43 | 13 | ${ }_{8}^{8-81}$ | 13 |
| Mooson－Kharii ．．．． | $\cdots$ | ${ }_{26}$ | （1013） | $8{ }^{\text {8i }}$ | 13：31 | 28 | 914 | $\stackrel{0}{9}$ | 114 | 21 | $12 \cdot 4$ | 25 | 1irsis | 12 | $1+10$ | 23 | 14.7 | in | 114 | 19 |
| Late Kaini ．．． | … 8 946 | 6 | 1\％3 | 5 | 581 | ＊ | 8． 0 | 6 | 8.50 | 7 | $8 \cdot 2$ | 6 | $2 \cdot 6$ | ${ }^{\text {b }}$ | 820 | － | 1.47 | ${ }^{6}$ | 1＊） | － |
| Total | ．．． $62 \%$ | 101 | $103 \cdot 51$ |  | 78，4 | 108 | 3．00 | is | 29.09 | b9 | 32．35 | 1 | 28.88 | 4 | 6312 | is | 61 27 | ${ }^{6}$ | $20 \cdot 28$ | 4 |
| Average | ．．． $51 \cdot 38$ | 78 | 108.0 | 03 | 70．05 | 81 | 9．88 |  | 2492 | 4 | 26.23 | bo | 26.30 | 39 | 31.61 | $\Delta 7$ | $2 T$ | 51 |  | 4 |

General characteristice．－Near the Sabyadris the rain of the noath－went monsinn is very e．in－ stant and heapy（Delganom and Khánápar）．Further eant，CLikudi，Gokák and Samignon．it is fitful．The eastern tálukas show a fittinl fall，but this is sapplumented by a acanty surply from the north－east monsoon（which comes generally in Octuber and lutir）．

Remarks．－Number of rainy days everg where iargur．In all tálokou excrpt Chnndgad potha， the total rain was in excoss of the averuge．The ante－tuonsoon showera wern heavy and favouruble for preparation of land und sowing of eurly rice．The mong，on opened ea Iy in Janand gave goxd rain till the end of August in the western talukas for boning and development of the kharif cropsa Bat in the eastern talukus the progress of the monsonn was chacked in the sirend furtai．ht of Junce The kharif crops in these parts sulfered from repented deticiencins in Jaly and Aagnat．They began to fade at the end of the latter month．But the advent of a timely rnin in Scytewher chinged this condition and started rabi sowings．The Hasta fall prolonged in Uctower proved wornewhat najnioge to the rabi jowári，but provided good moistore for other cropin．They had another good fall of Vishákha in November．No rain afterwards．The kharif crofn iulded well－12 n＇na in Chikodi， Parasgad and Khánápar；elsewhere 8 to 10 annag．Io parts of Sainj＂ian and lichák the yield was as low as 4 annas．Gram and wheat 16 annas in Gckák，elowhere y to lu or 12 annua．Cotton 6 to 10 annas．Rabi jowári not above 8 annas．

Bija＇pur， 1898.

| Ruin Periods． |  |  | Bisipur． |  | Indr． |  | Sindar． |  | $\mathrm{Ba}^{\prime} \mathrm{GB}$－ vidi． |  | Modor biakl． |  | $\begin{aligned} & \text { Ba'gab- } \\ & \text { кот. } \end{aligned}$ |  | Bilgi． |  | BAdMmi． |  | Hun． GUND． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Fall． | $\begin{aligned} & \text { 感 } \\ & \text { en } \\ & \text { 号 } \end{aligned}$ | Fall． |  | Fall． |  | Fall． | 宮 | Fall． |  |  | 号 | Fall | 㝘 | Fall， | 安 | Fall． | 安 |
| Karly Rains Mankoon－Kharif MontsoonLate Rabing$\ldots$ |  |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  |
|  | ．．． |  | $\ldots 0.5$ | 2 | 0.24 | 1 |  | 2 | $0 \cdot 59$ | 1 | $0 \cdot 10$ |  |  | ${ }^{7}$ | $0 \cdot 03$ | $\cdots$ | $1 \cdot 1.3$ | 1 | $0 \cdot 0$ |  |
|  | $\ldots$ | $\cdots$ | $\cdots \mathrm{Cl}$ | ${ }_{10}^{8}$ | 2－511 | 15 | ${ }_{8}^{2} \cdot 24$ | 12 | 4．43， | 7 | 8．14 | ${ }_{10}^{8}$ | －83 | 11 | ${ }_{5}{ }^{32}$ | 11 | － 8 B | 15 | 8．18 | 14 |
|  | $\cdots$ | ．．． |  |  |  | 15 |  |  |  |  |  | 20 |  |  | ${ }_{8} \cdot 21$ | 15 |  |  |  |  |
|  | $\cdots$ | $\cdots$ | $\cdots$ | ${ }_{6}^{20}$ | ${ }_{12}^{1120}$ | 19 |  | ${ }_{5}^{21}$ | 8．68 | ${ }^{15}$ | ${ }_{8}^{1711}$ | ${ }_{6}^{20}$ | － 24 | 19 | －${ }^{8}$ | 15 | － | 2 | ${ }_{868}$ | ${ }_{6}^{18}$ |
|  |  | Total | ．．． $26 \cdot 08$ | 47 | $26 \cdot 45$ | 48 | 27.08 | 44 | 21.75 | 33 | 90.15 | 4 | 66．32 | 48 | 21.12 | 85 | 28.93 | 60 | 26.49 | 45 |
|  |  | verage | ．．． $25 \cdot 63$ | 43 | 27.01 | 39 | 29.14 | 35 | 2630 | 41 | $29^{-53}$ | 42 | 24．18 | 41 | $25 \cdot 30$ | 35 | 2749 | 25 | 22．30 | 37 |

General characteristics．－This district receives its rain from both the sonth－west and the north－ east monsoon．Hungund enjoys an even and generally sure rainfall．Bágalkot and Bádámi fare well as a rule．The rich plains of the Krishna and Don valleys are uncertain．The north tálakas of Bijápur，Indi and Sindgi have capricious and light rainfall．

Remarks．－Rain above the average in Bijápur and the four sonthern tálukas．Elsewhere slightly under the average．Ante－monsoon showers suticient for preparation of land．The monsoon com－ menced early in the first week of June，but the fall was ill distributed．Sowings were checked by the break in the second fortnight．Both July and Augast rains were deficient．The lharif crops began to fade．In places they were completely lost．But timely relief came in September，which gave more than average rain．October rain was again sufficiently heavy and useful．The rabi crops were sown in time．The Vishákhas showers in November were heavicr than usual and very beneficial to young rabi crops．The rabi would have given a very good yield if the rains had not ceased altogether after November．They gave an outturn of 8 or 9 annas．Cotton yielded still low－－ 6 annas， The kharif crops were between 6 and 8 aunas．

Dha＇rwa＇r， 1898.

| n P | DHAR－ wér． |  | Hoblir |  | $\mathrm{K}_{\mathrm{ABAL}}$ |  | $\underset{\substack{\text { BANESA. } \\ \text { PUD. }}}{ }$ |  | HAngal． |  | KOD． |  | $\begin{gathered} \text { RANR- } \\ \text { BENNOR. } \end{gathered}$ |  | $\underset{\text { GI. }}{\text { KARAJ. }}$ |  | $\mathrm{Gadag}^{\text {a }}$ |  | MCN－ <br> DARGI． |  | Naval． GUND． |  | NAR－ GUND． |  | Ros． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 呂 | Fall． |  | Fall． |  | Fall． |  | Fall． |  | Fall． |  | Fali． |  | Fall． | 容 | Fall． | 盛 | Fall． |  | Fall． | 㙖 | Fall． |  | Fal | 冎 |
| E．carly Kains ．．． Monsoon－K harif Mo Boon－Rabi．．．Late luins | In． |  | In． |  | 1 n. |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | $\mathrm{In}^{1}$ |  | In． |  |
|  | $.$ | $13$ | 0 | $\left\lvert\, \begin{gathered} 1 \\ 18 \end{gathered}\right.$ | 1104 | ${ }^{3}$ | 0.08 |  | $0 \cdot 20$ | 1 | 8 |  |  | 10 | ${ }_{r} \mathrm{r} .18$ | 1 | 0.39 | 2 | 4 |  |  |  | $0 \cdot 30$ | 1 | $0 \cdot 11$ |  |
|  | ＋．．1 11.67 | ${ }_{35}^{13}$ | ${ }_{9} 9$ | ${ }_{29}^{18}$ | ${ }_{18} 18.80$ | ${ }_{4}^{13}$ | 80．98 | ${ }_{29}^{13}$ | ${ }_{1}{ }^{5} 12$ | 4 | ${ }_{1}$ | ${ }_{34}^{11}$ | 8.77 | 24 | $1 \% 17$ | ${ }_{24}^{11}$ | 4．7 | ${ }_{19}^{8}$ | ${ }^{4} 8.63$ | ${ }_{7}^{9}$ | ${ }^{5} 4.11$ | 10 | ${ }^{4} 8.74$ | $1{ }^{7}$ |  |  |
|  | $\cdots$ | 25 | 17.00 | ${ }^{28}$ | $10 \cdots 38$ | 33 | 13.13 | 23 | $13 \% 3$ | 28 | $1 \cdot 76$ | 30 | $17 \cdot 68$ | 21 | $1: 44$ | 24 | $1+17$ | 27 | $10^{\circ} 38$ | 14 | 17.91 | 23 | ${ }_{17}{ }^{6}$ | 20 | 6：92 |  |
|  | ．．． $2 \cdot 63$ | 5 | $2 \cdot 27$ | 7 | 3．49 | 8 | 2．39 | 4 | 2.50 | 4 | 3.07 | 7 | 2．73 | 7 | $3 \cdot 6$ | 5 | $3 \cdot \mathrm{H}$ | － | ${ }^{6} 76$ | 7 | $2 \cdot 25$ | 5 | 2.43 | － | $2 \cdot 35$ | 7 |
| Total. .94105 |  | 81 | 41.04 | 82 | 18．68 | 100 | ． 15 | 69 | 40.05 | 80 | $36 \cdot 45$ | 82 | 34.13 | 62 | $34 \cdot 84$ | 70 | 31.76 | 58 | 29.78 | 37 | 29.15. | 48 | 31.62 | 48 | 21.16 | 45 |
| Averago | $\left.\right\|^{13774}$ | $\left.64\right\|^{2}$ | $29^{60}$ |  |  |  | 28．37 62 |  | 85 | 79 | 27：23 | 62 | 23.74 | 49 | 29.0 |  | $4 \cdot 11$ | 48 | 20.11 | 33 | 28.82 | 45 | 27.20 | 37 | 99 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

General characteristics．－The district is composed of hilly tract3－the Mallad growing rice and hill grains（Шángal，Kalghatgi and Kod）and the black－soil plains growing cotton and wheat（Gadag Ron，Navalgund and Hubli），or cotton but no wheat（Karajgi and Ránebennur）．The Dhárwár and Bankápur tálukas are partly Mallad．The soil of the Mallud is red and gravelly，but the rainfall is steady and comparatively heavy．It is more sure and seasonable the further to the west．The proverb says：＇Good rain won＇t give a big crop，nor will bad rain bring famine．＇This is in compa－ rison to the fertile black－soil plains，where with good seasonable rains the produce is very large，but where the fall is irregular and ancertain and where there is always risk of drought．

Remarks．－Number of rainy days larger，The annual fall exceeded the average in all tálakas but Ron，where it was a little below．The ante－monsoon showers being heavy，kharif sowings commenced before the regular monsoon set in，in June．In the western portion they were completed in this month，but checked in the eastern talukas by the prolonged break of the sccond fort－ night．Conditions favourable to the kharif crops in July and August．But in the eastern talukas the July rain was deficient and there was practically very little rain in August．The crops began to wither．September fall was，however，generally above the average and improved kharif prospects． Kabi sowings were commenced well in time．October rain was also in excess of the usual fall．The Vishukha showers in November，though injurious to rice ready for harvest，was beneficial to rabi prospects．Rats appeared in places in December，but no serious or widespread damage was done． Cotton suffered from blight in places；it yielded 6 to 9 annas．Jowári－kharif 10 and rabi 11 annas． Rice 11 amas ；wheat 14 aanas；gram 12 annas．Linsecd 8 anuas．

Kainara， 1898.

| Rela Pexiode． | Kı＇awı＇ı． |  | Ayrola． |  | Eyyra． |  | Hoxative |  | Dratial |  | HaLIXA＇L． |  | Supa． |  | Yella＇pue． |  | M000000． |  | Silar． |  | Einditom |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall． | $\begin{aligned} & \text { 品 } \\ & \text { 点 } \\ & \text { 品 } \\ & \hline \end{aligned}$ | Fall． | $\begin{aligned} & \text { 曾 } \\ & \text { 总 } \end{aligned}$ | Fall． |  | Fall． |  | Fall． |  | Fall． | $\begin{aligned} & \stackrel{\vdots}{5} \\ & \frac{5}{5} \\ & \frac{5}{5} \\ & 5 \end{aligned}$ |  |  | Fall． |  | Fall． | $\begin{aligned} & \dot{8} \\ & \vdots \\ & \vdots \\ & \vdots \end{aligned}$ | Fall． | 患 | Fall | ${ }_{-}^{8}$ |
|  | In． |  | In． |  | In． |  | In， |  | In． |  | In． |  | In． |  | In． |  | In． |  | in． |  | In． |  |
| Early Imine ．．． | 0＇37 | 1 | 1．35 | 1 | 115 | 1 | $0 \cdot 30$ | 1 | 0.28 | 1 | 1.49 | 8 | 0.61 | 1 | 1.49 | 2 | 0.69 | 1 | $0 \times 28$ | 1 | $1 \cdot 38$ | 1 |
| Ante－Montoon ．．． | 1.69 | 4 | $3 \cdot 10$ | 7 | $1 \cdot 38$ | 7 | $4 \cdot 30$ | 7 | 8.67 | 6 | $8 \cdot 18$ | 16 | 8.07 | 9 | 370 | 9 | 100 | 13 | 6.09 | 9 | 8 | 9 |
| Moncoon－Kharit ．．． | 8247 | 64 | 110．40 | 68 | 95．59 | 68 | 93.20 | 67 | 103.61 | 68 | $28 \cdot 69$ | 65 | cs 67 | 64 | 68.26 | 69 | 3433 | $\stackrel{4}{4}$ | 70.77 | 61 | 78.08 | 61 |
| Moncoon－Rabl ．．． | 81．31 | 37 | 37.05 | 43 | 40.16 | 47 | $40 \cdot 24$ | 43 | $40 \cdot 3$ | 4 | 14.90 | 84 | 17．0 | 31 | 19.07 | 35 | 18．73 | 30 | 10000 | 35 | 87.02 | ＊ |
| Iate Rains | 8.08 | 7 | $0 \cdot 16$ | 6 | 409 | 8 | $8 \cdot 85$ | 0 | $8 \cdot 22$ | 11 | 8－68 | 0 | 3.31 | $\theta$ | $8 \cdot 16$ | 4 | 4 6 | 6 | 8.78 | 6 | 081 | 4 |
| Total ．． | 133.75 | 113 | 158.08 | 125 | 143.27 | 129 | 141＇68 | 126 | 268＇80 | 128 | 8509 | 115 | 01.08 | 116 | 92－60 |  | 65．22 | 03 | 9787 | 115 | 11478 | 124 |
| Average ．．． | 122．67 | 103 | 131.76 | 103 | $145 \cdot 17$ | 108 | 148＇35 | 110 | 167＇88 | 114 | 48.64 | 81 | 03－62 | 08 | 108.85 | 108 | 4190 | 84 | 101.76 | 114 | 11810 | 103 |

General characteristics．－A hills and thickly wonded district，divided into two parts by a brosen and irregalar range of hills．The lowland or coast tract hus the heavier rainfall；in the apland the fall rapidly decreases with the distance from the Sabsádri crest．

Remarks．－Rainfall below average in Yellapar，Sirsi，Ilondvar and Kumta，Flsewhere op to or above the arerage．，The monsoon set in in the beginning of June．Rain scasonnble and sullicient in July．Augast rain，though not as heavy aa nasual，was also seasonable．Septermbor ruin was heavy，but not injurious．October fall was again beavy，but moderated by intervening breaks in the latter half of the month，which were useful for harvesting early rice．The Viblak ha showors in November proved somewhat injurious to the rice ready for entting and to gardon crops in parts． The second crops were put in with good moistare．Rice jielded gencrally 12 annaa ； 9 or 10 annas where they were injared．Betelvuts 7 angna in Siddápar．Elsewhere 10 to 12 annas．Гeppur and cardamom fared as well as betelnut．

Ratn＇agiri， 1898.

| Bein Perioda． <br> ， | Ratya＇amas |  | Vmatila． |  | Mabiay． |  | Divasd． |  | Ra＇sa＇sus． |  |  |  | Cmipiz． |  | Orysiosm． |  | KıİD． |  | DS＇rozi． |  | Mamdinaso． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall． | 类 | Fall | 号 | Fall． | 案 | Fall | 号 | Fall． | $\begin{aligned} & \text { 兑 } \\ & \text { 总 } \\ & \text { 品 } \end{aligned}$ | Fall． | $\begin{aligned} & \text { 曹 } \\ & \frac{0}{2} \\ & \end{aligned}$ | Fall． | 患 | Fall． |  | Fall． |  | Fall． |  | Fall， | 号 |
| Berly Raline <br> Ante．Monsoon |  |  | In． |  | 10. |  | 10. |  | Iu． |  | In． |  | In． |  | In． |  | In． |  | 10. |  | Iu． |  |
|  | 0.49 | 1 | 0.74 | 2 | $2 \cdot 33$ | 2 | 0.50 | 1 | 0.62 | 3 | 2.88 | 1 | 0.45 | 1 | 0.07 | $\cdots$ | 0.30 | 1 | 0.08 | $\infty$ | 0.20 | 1 |
|  | 0064 | 2 | － 86 | 6 | $8 \cdot 38$ | ${ }^{5}$ | 089 | 1 | 0.52 | 5 | 194 | 8 | 106 | 1 | 0.38 | 1 | 0.61 | 2 | 0.07 | $\varepsilon$ | 084 | ＊ |
| Mensoon－Kharif ．．． | 95－23 | 55 | $84-29$ | 01 | 67．85 | 58 | 02．81 | 67 | 141.00 | 68 | 140．23 | 4 | $136 \cdot 10$ | 89 | 78.0 | 80 | 15708 | 62 | 13381 | 82 | $140 \cdot 10$ | 03 |
| Montoon－Rabi ．．． | 22\％61 | 35 | 27.15 | 34 | 30.80 | 35 | 25．68 | ss | 20.11 | 89 | $87 \cdot 00$ | 45 | $37 \cdot 18$ | 4 | 2220 | 85 | 40.03 | 4 | 8270 | 25 | ${ }^{3} 873$ | 6 |
| Lato Ralue | 0.20 | $\cdots$ | 6.19 | 7 | 4.58 | 8 | 8 89 | 8 | 4.42 | 6 | 120 | 6 | 1.4 | 2 | 010 | 1 | 815 | － | 0.81 | 1 | 109 | 8 |
| Total ．．． | 118＇97， | 03 | 223．29 | 109 | 108．88 | 102 | 98．66 | 06 | 176\％\％ | 116 | $181 \cdot 64$ | 119 | $178 \cdot 10$ | 116 | 08＇ 87 | 03 | 10163 | 11 | 1574 | 800 |  |  |
| Average ．．． | 101．97 | 00 | 1117\％ | ${ }^{5}$ | 07\％8 | 03 | 87－31 | 77 | 130．4 | 106 | 15924 | 118 | 188.73 |  | 103.23 | 101 | 152.60 | 10 | 1424 | 107 | 107 84 | 108 |

General characterixticn．－The district is formed by a narrow belt of low land ；though lilly and rugged as a whole，the valleya aro more open near the Suhyadria than towarda the contri，and thene again fall in to nearly level plateaus towards the cuntre．The raiofall is abundant and re；ular，being considerably heavier inland than on the coast．

Remarks．－Namiver of rainy dasí generalls larger．The agaregate rain in excebs of the average．Regular monsoon commenced a frw lays late in the eecond witk of June．The rain that fell in this month was not well distribated，being excousivo in some taluhisio the berginning and in－ sofficient at the end in others．Sowing＇s were，however，completed in tin．e．Transplantation effect－ ed under faveurable circomstancers in Jaly．Angast rain murh audre tho arorago，bat the light fall towarda the end of the month nisful for weeding．The Parva and Uttara rains in September rather heavg，tat no scrions injnry was cansed．Octsher rain in moderate showcrs in the firat week， light aud partial afterwards，when kharif crops were barvested．Nuverober rain $\mathrm{g}^{\prime}$ od fur garden crups．On the whole，the reason was good and crups fared woll．Rice，nágli aud harik yiutd cstimated at 10 annas；vari 8 anuas

Kola＇ba， 1898.

| Raln Period． | Alibs＇a． |  | Patibl． |  | Uran． |  | Khant． |  |  |  | Kra＇mípus． |  | PbN． |  | ROEA． |  | Sa＇ras ou． |  | Maiast． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall． | $\begin{aligned} & \text { 品 } \\ & \text { 邑 } \\ & \stackrel{y}{c} \end{aligned}$ | Fall． |  | Fall． |  | Fall． |  | Fall． | $\begin{aligned} & \text { 品 } \\ & \text { 弟 } \\ & \text { 吕 } \end{aligned}$ | Fall． | 容 | Fall． |  | Fall． | 宮 | Fall． | 䓪 | Fall． | 㫫 |
|  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  | In． |  |
| Early Rains |  | 1 | $0 \cdot 81$ | 1 | 3.24 | 1 | 0.74 | 1 | $0 \cdot 40$ | 8 | 0.58 | 2 | 0.20 | 1 | 0.72 | 1 | 0.20 | 1 | 0.65 | 1 |
| Ante－Monnoon | 0.20 | 1 | $0 \cdot 39$ | 1 | $\cdots$ | $\cdots$ | $0 \cdot 38$ | 1 | 0.05 | ．． | 0.08 | $\cdots$ | 0.62 | 1 | 0.18 | 1 | 0.24 | 1 | $0 \cdot 55$ | 3 |
| Moneoon－Kharlf | 70：30 | E5 | 8564 | 88 | 65.46 | 85 | 116.24 | 60 | 15442 | 67 | 11718 | 67 | 00：00 | 68 | 98.04 | ${ }^{64}$ | 118．87 | 63 | 115：83 | ${ }^{0} 0$ |
| Monsoon－Rabl ． | 30.62 | 28 | 20.42 | 36 | 3408． | 31 | 36.61 | 38 | 69.29 | 41 | 4169 | 80 | 3447 | 38 | 37.09 | 10 | 48：76 | 49 | 43.68 | 12 |
| Late Ralos ． | $0 \cdot 20$ | 1 | $1 \cdot 86$ | 1 | 0.77 | 1 | 0.40 | 2 | 0.25 | 2 | 0.18 | 1 | $0 \cdot 18$ | 1 | 0.84 | 1 | 8.48 | 2 | 217 | 2 |
| Total | 10148 | 86 | 136.12 | 97 | 04.6 | 88 | 154：33 | 102 | 20450 | 112 | 159.08 | 09 | 126：37 | 100 | 13774 | 103 | 168．14 | 109 | 10248 | 108 |
| $\Delta$ verago | 94．49 | 04 | 121＇33 | 97 | ${ }^{97} \cdot 4$ | ${ }^{4}$ | 138．10 | 08 | 229.03 | 113 | 132．64 | 104 | 12400 | 108 | 130.06 | 108 | 138.47 | 108 | 138＊ 4 | 107 |

General characteristics．－A rugged belt of country from 15 to 30 miles broad．Rainfall abuad－ ant and regular，being heaviest in parts towards the Sahyadris．

Remarks．－－Rain above the average in all talukas except Panvel，where not far short of it．Mon－ soon broke in the second week of June．In this month the rain was rather heavy，necessitating re－ sowing in places．Partial break in the third week，useful for completing sowings．July rain more than sufficient；in places injurious to young crops，but not bad for transplantation．The light fall of August made amends for the previous heavy rain．September rain being in excess of the usual fall would have been again injurious，but for the break at the end of the third week．Very little rain in October except the Hasta showers．Vishákha showers in November light，but rather untimely for rice cut or ready for reaping．Very little rain in December；none afterwards．Outturn of rice estimated at 12 annas．Warkas and rabi crops 10 annas．

Tha＇na， 1898.


General characteristics．－Inland，the district is woll watered and well wooded．Rainfall abund－ ant，being considcrably more inland than on the coast and less towards the north than towards the so uth．

Remarks．－The total rain in excess of the average at Thána，Marbád，Váda and Máhim；elsewhere below the average．Kharif rain commenced in the socond weel of June．Sowing begun and completed in time．Transplantation completed in Jaly without any dificulty．August rain less than usual， bat suffient to kecp crops thriving．The Purva and Uttara rain in September heavy，but the partial break at the end allowed no injury to take place．October rain limited to the light and partial Hasta showers in the first week．They were too scanty for the late crops in parts．Outturn of rice and nafli 9 to 10 anuas．Rabi crops 8 to 9 annas．Garden crops 10 annas．

Surat, 1893.


General characteristics.-Western portion all along the coast poor sandy sail; central belt with rich soil and moderate rainfall; forther to the east, Dangs with hoary rainfall bat light soil. As a rale, rain lighter on the coast than inland.

Remarks.-Rain below average except at Válod, whore 2 inches in excoss. Monsoon broke in the second week of June. At the end of June soring of rice nuarly over; that of cotton and jowhr in progress. In July the rain fell almost dnily with partial breaks intervening. Jico transplantation in full swing. Aagast rain rather light, but not invalficient except for rica. Good for weeding. Most of the September'rain fell in the Uttara period; it was favoarable and sumbient for all tharif crops. No rain fell in October, November and Decumber. Thus the acason clond too early. The rice suffered for this and yielded a mid.lling outturn. Other hharif crops were 'good, Rabi crops felt the want of moistare. Wheat outturn poor in places.

Broach, 1898.

| Rain Periods. | Brosiof. |  | Anclegvar. |  | HANsot. |  | Vioba. |  | A Mod. |  | Jambuane. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall. | Rainy days. | Fall. | Rainy daya. | Fall. | Raing dayn. | Fall. | $\begin{aligned} & \text { Balny } \\ & \text { dnje. } \end{aligned}$ | Fall. | Hainy days. | Fall. | $\begin{aligned} & \text { Ralny } \\ & \text { daye. } \end{aligned}$ |
|  | In, |  | In. |  | Ia. |  | In. |  | 1 ar . |  | 1 m. |  |
| Early Raini.. .. | 1-18 | 1 | $2 \cdot 45$ | 1 | $2 \cdot 61$ | 2 | 0.92 | $i$ | 1.08 | 1 | 1.07 | 1 |
| Ante-Monsoon .- | -• | -• | 0.05 | - | 0.30 | 1 | * | * | * | $\bullet$ | 0.11 | 1 |
| Moneoon-Kharif .. | 97-78 | 28 | 28.97 | 24 | 23.40 | 21 | 37.69 | 20 | $35 \cdot 61$ | 25 | 89.67 | 23 |
| Monseon Iabl .an | $8 \cdot 40$ | 15 | $8 \cdot 48$ | 14 | 768 | 0 | $11 \cdot 18$ | 14 | 1283 | 14 | $0 \cdot 70$ | 18 |
| Lete Rains.. .. | 016 | -• | 0.10 | ** | 0.01 | * | 0.33 | 2 | 0.18 | 1 | 005 | .. |
| Total .. | 47.51 | 41 | 99.08 | 39 | 32'88 | 83 | 60.01 | 4 | 40.36 | 61 | 6080 | 40 |
| Average .. | 42.78 | 51 | 40.4.4 | 66 | 85.50 | 6 | 35.67 | 40 | 23.62 | 30 | 3573 | 84 |

General characteristics.-Rich allavial plaing growing cotton and wheat. Rainfall moderatn but sure, being, as a rule, more plentiful in the Broach talaku. Tho raiufall is suriderneutel by heavy derve from October to December.

Remarks.-The aggregate rainfall was abose the avarnge except at Anhles:ar nul Manght, where not much in defect. Monsoon commenced wilh Mriz in June. The montha rain mar.". than the osual fall. Sowing of cotion and other kha, f crers in full swing. Joly rain sas excessive, too heavy for bajri and cotton. The latter was damage land bult, i, rewown. This was followed by light rain in Angast. More raiu wats degirable for the atanlin: blarif crifa and for sowing of the winter crops. But the rabi ficlds were sulticiontly maintured ly the heray fall of

 whole fairly good. Eharif crops gielded bitwera 9 and 19 aubau and raid 9 wilus.

Kaira, 1898.


General characterisics.-The district is mostly one nnbroken alluvial plain. In the north and north-east patches of rich rice land : the centre, a thact of most fertile soil yielding the choicest crops and westward a bare, though well cultivated, tract of rice land.

1
Remarks.-Rainfall below the average at Kaira, Mátar and Kapadvanj; elsewhere exceeding the average. Monsoon set in ou the l0th. Kharif sowings started in time, bat were chocked by the break at the end of the month. July rain was beary enough for completing sowings and transplantation. The fall of Augast was half of the usual fall in the majority of tálokas. But the crops were heal thy. September rain was in marked excess of the average in almost all talukas. The latter balf of this month was rainless, and the break was ceeful for rabi sowings. No rain in October. Kbarif crops harvested. Rabi suffered from absence of rain in October and November. Kharif crops yielded from 9 to 10 annas. Rabi 6 to 8 annas.

## Panch Maha'ls, 1898.

| Esin Periods, | GodHes. |  | KALOL. |  | HSxox. |  | DoHkd. |  | Jhílod. |  | JAMBUGHODA. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall | Raing daya. | Fall. | Rainy daya. | Fall. | Rainy days. | Fall. | Rainy days. | Fall. | Ralny dayn. | Fall. | Rainy dayts |
|  | In. |  | In. |  | In. |  | In. |  | In. |  | In. |  |
| Early Rains..* ... | 0.98 | 1 | 1.46 | 1 | $2 \cdot 60$ | 1 | 1.62 | 1 | $1 \cdot 15$ | - 2 | $1 \cdot 56$ | $1{ }^{\prime}$ |
|  | 0.07 | - | $0 \cdot 15$ | 1 | 0.16 | 1 | $\cdots$ | ** | 0.18 | 1 | - | $\cdots$ |
| Moneoon-Kharl ... | 29.68 | 85 | 33.17 | 23 | 40.67 | 24 | $16 \cdot 96$ | 19 | $25 \cdot 69$ | 22 | 41.01 | 28 |
| Monsoon-Rabl -m | 12•36 | 18 | 14:68 | 15 | $20 \cdot 15$ | 17 | $16 \cdot 37$ | 19 | 13.56 | 16 | 18.72 | 18 |
| Late Rains ... ... | 0040 | 1 | 0.23 | 1 | 0.30 | 1 | 0.26 | 1 | 0.80 | 2 | $0 \cdot 17$ | 1 |
| Total | 43.49 | 42 | $40 \cdot 67$ | 41 | 63.88 | 44 | $35 \cdot 21$ | 40 | 41.18 | 43 | $61 \cdot 46$ | 48 |
| Arerage ... | 40'85 | 68 | $30 \cdot 26$ | 43 | 41.86 | 68 | 50.12 | 43 | 31'83 | 4 | 47.08 | 61 |

## General characteristies.-Rainfall lighter and later in the east than in the western division.

Remarks.-With a smaller number of rainy days the total fall of rain was everywhere in excess of the average. Asin other Gujarát Districts the sowing rain came in the second week; bat the break at the end of the month did not allow sowings to be completed. July rain was suficiently heavy and favoarable for the completion of soringe as well as transplantation. August rain proved exces sive fur maize in Jhalod. Other crofs flourished without any chack. The Parva rain in September was light, but it was followed by the heary fall of the Uttara. Maize reaped and rabi sowings effected during the break at the end of the month. No rain in October-November. Only drizzling showers in December. The estimated oatturn of maize 8 annas. Rice 11 2nnas. Kodra, bajri und other crops 8 to 9 anuas. Wheat and gram 9 to 10 annas.
xiii
Ahmadabad, 1898.

| Rain Periods. | $\begin{aligned} & \text { AHMED- } \\ & \text { ABAD. } \end{aligned}$ |  | Parintij* |  | Modisa. |  | SANAND. |  | Viramodm. |  | Datisa. |  | Drin. DEEEA. |  | Gooma. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fall. | Rainy daye. | Fall. | $\begin{aligned} & \text { nainy } \\ & \text { daye. } \end{aligned}$ | Fall. | nainy daya. | Fall. | $\begin{aligned} & \mathrm{R}_{\text {aing }} \\ & \text { days. } \end{aligned}$ | Fall. | $\begin{array}{\|l} \text { Rainy } \\ \text { day. } \end{array}$ | Fill. | $\begin{aligned} & \text { Rainy } \\ & \text { dayu. } \end{aligned}$ | Fell. | $\left\{\begin{array}{l} \text { Raily } \\ \text { dave } \end{array}\right.$ | Fall. | $\begin{aligned} & \begin{array}{l} \text { ningy } \\ \text { day } \end{array} \text {. } \end{aligned}$ |
| - | In. |  | In. |  | In. |  | $\mathrm{In}_{0}$ |  | In. |  | In. |  | In. |  | 1 l. |  |
| Early Raing ... | 0.76 | 1. | ** | $\cdots$ | 0.05 | 1 | 0.23 | 1 | 0.10 | 1 | 0.18 | 1 | 0.80 | 1 | 0.12 | 1 |
| Ante-Monsoon ... | ** | $\cdots$ | $\cdots$ | $\cdots$ | 0.23 | 1 | 0.20 | 1 | - | $\cdots$ | 0.06 | ... | 1:3 | 1 | 0.37 | 1 |
| Mongoon-Kharif ... | 23.07 | 17 | 34.42 | 24 | 28.82 | 10 | 21.08 | 20 | 13.59 | 17 | $33 \cdot 33$ | 18 | 1270 | 14 | :073 | 10 |
| Moncoon-Rabl ... | 11.61 | 10 | 7651 | 13 | $14 \cdot 67$ | 9 | 10\%\%8 | 8 | 0.38 | 12 | 7.04 | 0 | 10\% | 18 | 0.87 | 12 |
| Late Rains ... | 0.49 | 1 | 0.40 | 2 | 0.43 | 1 | 0^80 | 1 | 0.44 | 1 | 0.12 | 1 | 0.10 | 1 | 0.4 | $\cdots$ |
| Total ... | 86.63 | 29 | 42:33 | 39 | $45 \cdot 10$ | 81 | 92.34 | 81 | 2347 | 31 | $32 \cdot 10$ | 30 | $0 \cdot 70$ | 20 | 1313 | 83 |
| Average ... | 32.29 | 44 | 91.05 | - 10 | 38.38 | 41 | 30.31 | 43 | 8101 | 33 | 4•30 | 43 | 7.34 | 81 | $20 \% 0$ | 84 |

General characteristics.-Except in the hilly parts of Modábn, where the supply is sometimes considerable, the rainfall throughout the district is genorally very light.

Remarks.-The total rain below average in Dholka and Viramgám ; oleewhore ap, to or alovo the average. The sowing rain came before the middle of Juue, but ceasod in the drdra period. Kharif sowings were, however, well oompleted in July. Angast rain was light for rice. Othre kharif crops were good. September rain was mure than donble at some stations. This closed tho rainy season. Rabi sowings completed in October. These crops felt the early cessation of late rains. The outtarn of kharif crops estimated at 4 to 6 annas in Viramgám ; clsewhere 10 to 12 anmas. Wheat varicd from 8 to 14 annas. The untimely showers early in December and excessive cold lato in December and in January combined reduced the outturn of cotton to 8 annas in pluces.

## ¿C5

## STATISTICS.

AGRICULTURAL.
(CHAPTER VII.)

I-Area of Available Statistics.
II.-Area, Caltivated and Uncultivated.
III.-Crops.
IV.--Irrigation.
V.-Agricultural Stock.
II. A.-Details of "Fallow."
III. A.-Principal Fruit-bearing Trees.
III. B.--Details under Khari'f and Rabi Crops.

Arap of a railabie Statistics, 1898-99.

.93\%.

II-Area, Cultivated and Uncultivated, 1898-99.


III.-Crops, 1898-99.



III.-Crops, 1898-99—continuod.


III.-Crops, 1898-99-continued.


III．－Crops，1898－99－conlinued．

|  |  | v．－Cordiciam ant gricem． |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | VI，－9razcriar． |  |  | VII．－8uams． |  |  |
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| 1 | 2 44 | 45 | 46 | 47 | 48 | 48 | 50 | 61 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 69 | 60 | 61 | 62 | 63 | 64 | 65 | 68 |
|  | A．－Bomaat Phandancy Propin． I．－Gyandt． |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | － 4 creal |  |  | Aerea． |  |  | Acres． |
| 1 |  |  | 309 <br> - | $\stackrel{\square}{\square}$ | $\cdots$ | $\pm$ | $\cdots{ }^{2}$ | 180 <br> $\cdots$ <br>  <br>  |  | － 14 | $\cdots{ }^{15}$ | $\cdots$ | $\begin{array}{r}916 \\ \hline 00 \\ \hline 0 .\end{array}$ | $\pm{ }^{14}$ | 80 | $\pm$ | 8，889 | $\cdots$ | $\cdots$ | $\cdots$ | ${ }^{1.140}$ | $\because$ | 1.100 .046 |
|  | Total ．o．0 | 2811 | 209 | －－． | $\cdots$ | $\cdots$ | 8 |  |  | 28 | 14 | $\cdots$ | 946 | 14 |  |  | 4，306 | ＊＊ | $\cdots$ | ＊＊ | 1，838 | 4 | 1，838 |
| 2 |  | 2086 8 1 | ${ }^{201}$ | $\cdots$ | $\cdots$ | $\cdots$ | －$\quad 1$ | －88 | $-1$ | ＂－ | $\begin{array}{r}1,879 \\ \\ \hline 88\end{array}$ | 5 -1 | 902 $-\quad 1$ | $\cdots{ }^{78}$ | － 180 |  | $\begin{array}{r} 4,092 \\ 80 \\ 80 \end{array}$ | $\cdots{ }^{25}$ | $\stackrel{58}{=}$ | $\cdots$ | $\because \stackrel{804}{80}$ | $\stackrel{\square}{-}$ | ¢88 |
|  | tal ．．． | 1，085 | 806 | $\cdots$ | $\ldots$ | $\cdots$ | 23 | 950 | 1 | $\cdots$ | 1，942 | － 6 | 203 | 75 | 126 | 373 | 6，090 | 25 | 58 | 83 | 1，027 | －．． | 1，027 |
| 8 |  | $\begin{aligned} & 800 \\ & 200 \\ & 200 \end{aligned}$ | $\pm$ | $=$ | $\pm$ | $\pm$ | $\bar{\square}$ | $\cdots$ | $={ }^{1}$ | $\cdots$ | $\cdot{ }_{-12}^{n}$ | $\pm$ | ${ }_{10}^{87}$ | $\stackrel{\square}{ \pm}$ |  | $\stackrel{\square}{\square}$ | （100 | $\cdots$ | $\cdots$ | $\underline{\square}$ | $\begin{gathered} 188 \\ \substack{87 \\ 16} \end{gathered}$ | － | $\begin{gathered} 188 \\ 78 \\ 16 \\ 16 \end{gathered}$ |
|  | tal ．．． | 927 | 6 | －0． | $\cdots$ | $\cdots$ |  |  | 1 | 14 | 33 |  | 104 | $\ldots$ | 103 |  | 1，187 | ．．． | ．．． | $\ldots$ | 237 | ．．． | 237 |
| 4 |  | $\pm 8$ | ${ }^{20}$ | － | $=$ | E | $\cdots$ | \＃ |  | $\therefore{ }^{\circ}$ | $\cdots$ | $\underline{-}$ |  |  |  |  | ${ }^{301}$ | $\cdots$ | $\cdots$ | $\cdots$ | 74 | $\cdots$ | 76 |
|  | －Total ．． | 873 |  |  |  |  | －22 | － |  |  |  | $\cdots$ | ${ }^{\prime \prime} 1$ | 1 | 33 |  | 351 |  | ．．． |  | 74 | －－ | 74 |
| E |  | $\begin{aligned} & \text { rex } \\ & \text { ran } \end{aligned}$ | $\stackrel{100}{=}$ | － | 二 | $\stackrel{\square}{2}$ | $\sim^{115}$ | ＝ | $\sim^{3}$ | $=2$ | $\underline{\square}$ | $=$ | $\overbrace{}^{188}$ | $=^{191}$ | $]^{67}$ |  | －1，435 | $\pm$ | ㅍ | $\cdots$ | 6，007 ${ }_{6}^{68}$ | ＝ | $\sin _{6}$ |
|  | 1 | 825 | 180 |  |  |  | 115 |  | 2 | 2 |  | 6 | 182 | 121 | 67 | 35 | 1，535 | － | $\ldots$ | $\ldots$ | 4，759 |  | 4.759 |
| － | II．－Deean． |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 |  | － 8 | $\because \cdot$ | 三 | － | $\bar{\square}$ | －${ }^{1}$ | $\underline{808}$ | ${ }^{2}$ | $\stackrel{11,876}{=}$ | $\ddot{\square}$ | －340 | －60 | $\pm$ | －${ }^{19}$ | － | －30，307 | 판 | $\stackrel{1}{-}$ | $={ }^{1}$ | $\begin{aligned} & 1,809 \\ & \hline-\infty \\ & \hline \end{aligned}$ | ＝ | $-\infty$ |
|  | Total ．．． | 10，188 | 8 |  | 232 |  | 60 |  | 2，420 | 11，876 | $\cdots$ | $\mathbf{3 6 3}$ | 87 | 81 |  |  | 28，773 |  | 1 | 1 | 1，923 | ．．． | 1，922 |
| 7 |  | $\text { © } 04$ | $=$ | $=$ | 120 | $={ }^{3}$ | $\pm^{5}$ | $\pm$ | $m$ | 30 | $-^{1}$ | －88 | 2800 | ${ }_{-m}$ |  | 二 | 7,10 -801 | 二 | $\pm$ | $\cdots$ | $\underbrace{6}_{-2008}$ | － | $634$ |
|  | $a^{\circ}-\infty$ | 4.800 | 9 |  | 141 | 1 | 15 | ， | 17 | 48 | 1 | 25 | 1，834 | 390 | 701 |  | 8，031 | $\cdots$ | 49 | 49 | 7，008 | ．． | 7，008 |
| 8 |  | come | $\underline{=}$ | $=$ | 28 | $=$ | － | $-1$ | 8 | $-{ }^{10}$ | $=$ | $\pm$ | ＝ | $={ }^{\circ}$ |  | $\pm$ | 4．001 | $\underline{\square}$ | $=$ | $\cdots$ | 1.176 | $\cdots$ | 1,480 |
|  | Total ．．． |  | $\cdots$ | ．．． | 244 | 1 | $\cdots$ | 1 | ${ }_{.} 5$ | 16 |  |  |  | 591 | 142 |  |  |  | ．．． |  |  |  |  |



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## ${ }^{218}$

III.-Crops, 1898-99—continued.




1V-Irrigation, 1898-99.


IV-Irrigation, 1898.99 - continued.



> V-Agricultural stock, 1898-99.



Accompaniment A to Agricultural Return No. II.
Details of "Current Falloow," 1898.99.


Accoupanifint a to Agicoltural Return No. IIf.
Number of Principal Fruit-bearing Trees, 1535-03.




Accompaninint $B$ to Ratorn No. III-continued.
Details of Kharif and Rali under Cereals and Pulses, 1833-93.


xliv
Annual Return of Retail Prices of staple Food-grains and other important $\Delta$ rticles
Note.-The pricen roprenent the annual avorage prices calculated from the


## xly

in the Bomlay Presildency for the Calendar year 1 Sj8.
monthly. returns of retail prices pullished in the Government Garette.

## of 40 acrs, I ser bs 80 tolas.




[^0]:    Other Cereals.-Among these, vari, barley, banti (barti) and bhadli show decreases. The rest increased. Vari is said to

    | Crop. |  |  | Aores (000 omitted). |  |
    | :---: | :---: | :---: | :---: | :---: |
    |  |  |  | Presidency Proper. | Sind. |
    | Kodra (Harlt) | ..' | 4 | +7 |  |
    | R2pl (Nathni) | -* | . | +9 | $\cdots$ |
    | Vari (Sava) ... | -. | $\cdots$ | +10 -8 | ... |
    | Barley ... $\quad$... | .... | $\cdots$ | -6 | -9 |
    | Maize ... ... | $\ldots$ | $\cdots$ | +10 | -9 |
    | Banti (Barti)... | ... | $\cdots$ | +10 | $\cdots$ |
    | Abadli ... | ... | $\cdots$ | -2 | 0 |
    | Others ... | $\ldots$ | , | ".. | ${ }^{5}$ | have given way before other more important crops. barley, which is principally cultivated in Northern Gujarat, declined mainly in Ahmedabad, where it appears to have shared the fate of wheat, which it resembles in cultivation. Maize increased largely in the Panch Maháls and Sátára. Elsewhere it declined, but the decreases were small in proportion to the cultivation. Favourable rain encouraged kodra, rági and rála. Barley in Sind partook of the general shrinkage.

