REPORT

ON THE OPERATIONS OF

Third Settlement in the Thabaung, Kyaunggon, Kyonpyaw and Ngathainggyaung Townships, and in part of the Bassein Township

TOGETHER WITH THF

First Settlement of Newly Surveyed Areas in the Thabaung and Ngaputaw Townships

OF THE

BASSEIN DISTRICT

SEASON 1912-1914



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RESOLUTION

ON THE

REPORT ON THE THIRD SETTLEMENT OF THE NORTHERN PORTION OF THE BASSEIN DISTRICT [Thabaung, Kyaunggon, Kyonpyaw, Ngathainggyaung and Bassein (Northern portion) Townships] AND THE FIRST SETTLEMENT OF THE TRANS-YOMA AREA.

Season 1912-14.

Extract from the Proceedings of the Government of Burma in the Land Revenue Department, No. 15-11 of the 26th June 1915.

READ-

- (1) Report on the operations of the Third Settlement in the Thabaung, Kyaunggôn, Kyonpyaw and Ngathainggyaung Townships, and in part of the Bassein Township together with the First Settlement of Newly Surveyed Areas in the Thabaung and Ngaputaw Townships of the Bassein District. Season 1912-14.
- (2) The Review of the above Report as recorded in the Proceedings of the Committee assembled at Bassein on the 21st and 22nd December 1914 under the authority of paragraph 330 of the Burma Settlement Instructions.
- (3) Note by the Financial Commissioner, Burma, on the above Report.

RESOLUTION.—The settlement area dealt with in the present Report consists of that portion of the Bassem District that lies north of Bassein Town, and of the cultivated lands spread along the sea-coast on the west side of the Arakan Yoma Range. The latter area comes under settlement for the first time; the land revenue rates in the rest of the area were settled for the second time during the three seasons 1897-98-99-1900.

2. The greater part of the settlement area is typically deltaic, with rice as the staple crop. The large surplus available for sale Reasons for Re-assessment goes by boat or rail to Bassein Town where it is milled for export. The occu pied area has increased by 31 per cent. since 1899 and now forms 55'28 per cent. of the gross area; 15'38 per cent. of the balance is classed as culturable waste. At the same time, the estimated increase of the population has only been 17 per cent. The price of unhusked rice has risen by 22 per cent. since the existing land revenue rates were fixed, and this rise has enabled the cultivators to improve their standard of living and to indulge more extensively in hired labour for agricultural operations. The construction of the railway between Henzada and Bassein has greatly benefited a portion of the settlement area which was formerly landlocked. The gradual deposit of silt in flooded areas has rendered culturable much of the land which was formerly unculturable and made secure the crops on land which were formerly liable to destruction by flooding. The rented area is large; in the more fertile parts there is considerable competition for land and the landholders are in a position to select their tenants. As a result, customary rents, which were general during the Second Settlement operations, have now been ousted by competitive rents except in the

2 RESOLUTION ON THE REPORT ON THE THIRD SETTLEMENT OF THE NORTHERN PORTION OF THE

case of the very worst land. The sale value of land has doubled or trebled in several assessment tracts.

3. The facts summarised briefly in the preceding paragraph indicate that in Sanctioned Rates and Finanfixing the assessment rates for the currency of the Third cial Results. Settlement Government is entitled to obtain a considerable enhancement over the existing demand. The Settlement Officer's proposed rates, which apply to the area under cultivation in the year of settlement (1913, in the Thabaung, Kyaunggon and Bassein Townships ; 1914, in Kyonpvaw and Ngathainggyaung), will produce an increase of Rs. 2,62,263 or 21'41 per cent. above the demand of the rates actually in force. Nineteen assessment tracts have been formed by the combination of twelve primary and four price tracts ; in twelve of these the rice land has been divided into three soil classes and in seven into two. The fertility assumptions closely follow the results of crop-reaping, and their value is based on an assumed price of Rs. 112 per hundred 46-lb. baskets at Bassein, less a liberal allowance for cost of carriage and broker's profits. From the gross produce thus obtained, the nett produce has been arrived at by deducting the cost of cultivation calculated on a basis which makes no allowance for the home labour of the cultivator and his family but is otherwise liberal. The proposed rates represent a proportion of the nett produce varying from an eighth in the less prosperous tracts to a sixth in the better tracts The higher figure is considerably less than the fourth net produce which is the provisional assessment standard for Lower Burma, but the Lieutenant-Governor considers that the proportion is sufficiently high in view of the fact that the assumed cost of cultivation does not fully represent the outlay necessary to raise a crop. The Officers of the Committee who examined the Report recommend several reductions in the rates proposed by the Seitlement Officer, thereby reducing the total enhancement to Rs. 2,32,200 or 19 per cont. The Financial Commissioner, on the other hand, proposes to raise the demand by Rs. 2,88,897 or 26'13 per cent. in the case of the rice land. The Lieutenant-Governor accepts the rates proposed in paragraph 10 of the Financial Commissioner's Note, and agrees with him that it is not necessary to make the reductions recommended by the Settlement Committee. He also accepts the proposals in paragraph 11 of that Note for the assessment of spring-rice (mayin), gardens, miscellaneous vegetable cultivation, and special crops. In the case of betel-vine gardens, the minimum assessment in any single garden is fixed at Re. 1. The tax on solitary fruit trees, producing Rs. 1,263, will be discontinued as in other districts. The rates now sanctioned will be in force for a period of twenty years from the 1st July 1915, save in the Daunggyi, Kwingyaung and Bodaw-Kanni circles of the Ngathainggyaung Township, where the existing demand does not expire till the 30th June 1916. In these circles the new rates will take effect from the 1st July 1916 and will be in force for a period of nineteen years, so as to expire simultaneously with the rates sanctioned for the rest of the settlement area. Intermediate rates will be sanctioned in all cases where the new rates on any soil class exceed the corresponding rates of the expiring settlement by more than 50 per cent. Had the rates now sanctioned been in force in the settlement year, they would have produced a demand of Rs. 15,15,154 or 23.87 per cent. in excess of the actual demand of Rs. 12,23,143.

4. The proposed extension of the Ngawun Embankment, discussed in paragraph 8 of the Report, is one of several embankment schemes which have from time to time been

under the consideration of Government in the Public Works Department; the Lieutenant-Governor is unable to hold out any prospect of its early inception. In the present state of the Provincial finances he is disposed to concur with the Financial Commissioner that it is advisable to wait and ascertain whether the process of natural reclamation continues before an extension of the embankment is contemplated. The improvements in communications, recommended by the Settlement Committee in paragraph 5 of the Review, will be considered by Government in the Public Works Department. The need of a road bridge across the Daga River at Kyonpyaw was foreshadowed in the Local Government's Resolution on the Report on Revision Settlement Operations in the Bassein District, Season 1898-99. The Irrawaddy Commissioner's suggestion that a dredger should be provided to clear the navigation channels and fishery streams which have gradually become choked with silt is prima facie a good one. Some channels will, it is hoped, be cleared as an experiment by the new dredger under contemplation for the Pegu-Sittang Canal but the possibility of keeping such channels open without constant dredging has yet to be proved. Executive action has already been taken to combat the menace to navigation of the water hyacinth. In paragraph 45 of his Report the Settlement Officer indicates that one of the reasons for the small extent to which agricultural advances have been taken in the settlement area is the fact that some of the objects for which loans are desired are inadmissible under the Act. The Settlement Committee (paragraph 9 of the Review) suggest that re-roofing of dwelling-houses and payment of labourers might be prescribed as additional objects for loans. The provisions of Rule 1 (b) of the Rules under the Agriculturists' Loans Act, 1884, appear to be sufficiently wide to cover these purposes, but the Financial Commissioner is requested to advise whether they might not be mentioned specifically in the rule. The Settlement Committee (paragraph 10 of the Review) suggest the issue of temporary cultivation leases for the clearance of reserved grazing grounds which are overgrown with jungle. So long as care is taken to restrict the term of the leases to a time sufficient to make it worth the cultivators' while to clear the land and bring it under cultivation and to evict them at the expiry of the term, the Lieutenant-Governor has no objection to the action suggested.

5. The Lieutenant-Governor concurs in the commendation by the Settlement Committee and the Financial Commissioner of the work of the Settlement Officer, Mr. P. E. Jamieson, I.C.S. A note will be made in the Appointment Department of the good services rendered by the Assistant Settlement Officer, Maung Po Thaung of the Subordinate Civil Service.

By order of the Lieutenant-Governor of Burma,

W. J. KEITH, Offg. Revenue Secretary to the Government of Burma.

G. B. C. P. O.-No. 295, C. of S. & L. R., 1-7-1915-275-J A. P.

Note by the Financial Commissioner on the Report on the Revision Settlement of the Northern portion of the Bassein District, Season 1912-14.

The bulk of the area dealt with in this Report was last settled during the seasons 1897-98 and 1898-99. The assessment rates sanctioned were fixed for periods of 15 years and 14 years respectively, and the term of settlement has expired in each case on the 30th June 1914 Three circles on the north, adjoining the Henzada District, were dealt with in the season 1899-1900 and in these circles the existing rates remain in force until 30th June 1916. The Report also contains proposals for the first settlement of a belt of cultivation scattered along the coast to the west of the Arakan Yoma Hills.

2. The physical features of the country are set out fully in the Report and in the note of the Settlement Committee. In the centre there is a large area which is flooded regularly from the Ngawun river during the rains and in which the cultivation of rice is therefore more or less precarious The east and north of the tract form a rich deltaic plain, throughout the greater part of which the rice crop is practically assured On the west the area under revision settlement rises towards the Arakan Yomas.

3. In paragraph 8 of the Report the Settlement Officer gives some interesting figures in relation to the suggested reclamation of the flooded area to the east of the Ngawun river by the extension southwards of the Ngawun embankment His calculations purport to be rough estimates only, and in view of the general indications that the flooded area is tending to decrease from year to year I think that it will be advisable to wait and ascertain whether the process of natural reclamation continues before an extension of the embankment is contemplated.

4. So much of the revision area as is situated at a distance from the Bassem-Henzada railway depends mainly on water-ways for means of communication and the suggestion that a small dredger should be employed to keep open the channels here and elsewhere in the Irrawaddy Division is deserving of serious consideration. I am pleased to observe that measures for the eradication of the water-hyacinth, which is becoming a menace to navigation, are under the consideration of Government.

5. Mention is made in paragraph 24 of the Report of some of the difficulties with which the co-operative movement has to contend in its introduction into the Bassein District and elsewhere in Lower Burma. The limited number of officers available for supervision of this work have been compelled to give most of their attention hitherto to the Upper Burma districts in which conditions are more suited to co-operative measures, and in several of which co-operative societies are now numerous and well established Greater development is to be expected in future in Lower Burma, but the process must be gradual, and it will be some years before co-operaton can obtain the firm hold which it has already acquired in the Upper Province. 6. In the determination for purposes of assessment of the cost of cultivation the Settlement Officer has omitted any allowance for the value of the cultivator's own labour or the babour of his family. I have addressed Government separately as to the desirability of the exclusion of such allowance from the cost of cultivation and I shall not refer to the subject further in this note, except to remark that the figures given by the Settlement Committee in paragraph 8 of their note support my view as to the difficulty in the satisfactory calculation of such allowance.

7. The Settlement Officer has divided the rice-land into nineteen assessment tracts of which one (8D) comprises the area under original settlement and the remainder are formed of the revision area. I find it impossible in the latter area to trace any direct relation between the present tracts and the tracts constituted at the last settlements. The opening of the railway and the partial reclamation of the flooded area would necessarily involve a modification of the price tracts and primary tracts from which the assessment tracts are formed, but some further explanation should have been given in the Report of the reasons for which it was found necessary to modify the earlier classification in other respects. Changes in the boundaries of tracts and in soil classification are apt to result in large enhancements of assessment on individual holdings, which cannot in all cases be met by the application of intermediate rates, and which might have been avoided to some extent if more consideration had been given to existing classification.

8. At Bassein, which is the central market for the tract under re-settlement the average harvest price of paddy for the five years ending 1914 is 45 per cent. above the average price for the five years prior to the last settlements. The Settlement Officer has taken a twenty years' average for the purpose of his calculations and the average for this long period is still 21'74 per cent. above the prices assumed at the earlier settlements. Since these settlements the average rental has risen in cash value from 5 85 rupees to 9'06 rupees per acre. The sale and mortgage values of agricultural lands show large enhancements, and the continued prosperity of the settlement tract is indicated by the growth in the area under cultivation and by the ligher average cost of living of the land-owner and tenant classes. These facts, taken together, indicate that some considerable enhancement may suitably be made in the rates of land revenue assessment. The average indebtedness of persons in debt is calculated to have risen from Rs. 136 to Rs. 308, but there is reported to have been no increase in the number of persons in debt, and the larger debts are mainly due to a growth in agricultural credit, with a succession of good seasons, and to the greater facility with which loans have been offered in recent years.

9. The Settlement Officer bases his proposed rates for paddy land on a fraction of the net produce, varying from one-sixth to one-eighth, and compares these rates with a two-fifths share of the rentals in each tract and soil class. The Bassein District has suffered severely from cattle disease in the past, and with the comparative immunity which the district has fortunately enjoyed during recent years it is possible that the allowance made by the Settlement Officer for replacement of cattle in determining the cost of cultivation is less than past history may be held to justify. Even so, however, I am of opinion that the conditions in the settlement area justify a nearer approach to the provisional standard of one-fourth net produce. At the rates proposed the enhancement of the assessment for the area as a whole amounts to 23'2 per cent., which is much below the percentage of increase in the price of paddy, in rents, and in the cost of living since last settle-Some increase in rates is also needed to bring this area to the standard ment. of assessment which has recently been fixed by Government for the southern half of the district. The comparison made in paragraph 145 of the Report of the sanctioned and proposed rates in adjoining tracts in the two areas indicates that a somewhat lower standard is being adopted in the rates now proposed, and I find the same tendency to a more lenient assessment when comparison is made of other tracts in the two areas.

10. I propose that in the following tracts the rates for certain of the soil classes should be increased as indicated below :---

Tract		Soil class	Settlement Officer's proposed rate.	Rate now proposed.
			Rs.	Rs
	r	I	2.75	3.00
2Å		3	1 50	1 75
	l	3	1.00	1 25
3Å		1	3 00	3 25
3B		1	2.75	3 00
*B		1	3 50	3 75
6B		3	2 00	2 2 5
100400	ſ	2	3 25	3.20
ŷВ	ξ,	3	1 75	2 00
90	1	3	1 50	2 00
пB	•• .	3	1'75	2 00
11C	•	3	I 50	3.00
12B	• 1	2	3 00	3 25

On the lowest soil classes in these tracts I have raised the rates with reference The revenue has been paid without difficulty in the partly to present assessments past and so long as the existing rates are below the one-fourth standard there is no ground for any material reduction If the rates are raised as proposed above I do not consider that it is necessary to make the reductions recommended by the Settlement Committee for some of the other soil classes in certain of the revision tracts. I agree with the Committee that the rates proposed by the Settlement Officer for Tract 8D are too high This is the tract under original settlement along the sea-coast. The Settlement Officer's rates give an enhancement of 128 per cent. and there will be a further considerable increase owing to the recent introduction of correct survey in this tract The rates purport to represent 7 per cent only of the value of the net produce, but the assumed cost of cultivation is low, and Rs. 84 per 100 baskets is a high price to take for a tract which exports little or no paddy and has no adequate means of communication with the outside world It is not necessary to reduce the rates to the extent proposed by the Committee and I consider that the following rates would be suitable :---

		Rs.
Soil class 1	 	1'50
Soil class 2	 	1,00
Soil class 3	 	0.75

The increase in the assessment of each tract throughout the settlement area at the revised rates now proposed is shewn in the statement appended. The increase for the whole area amounts to Rs. 2,88,897 or 26'13 per cent. The application of intermediate rates in the cases in which the rate on a soil class in any tract is increased by more than 50 per cent. will reduce the immediate enhancement.

11. Subject to the following remarks I support the proposals of the Settlement Officer, as modified by the Settlement Committee, for the assessment of mayin, gardens, miscellaneous vegetable cultivation, special crops and solitary fruit trees. In Tracts 3A, 3B and 3C I consider that Rs. 2'50 per acre is a

(4)

sufficiently low rate for pine-apple and other garden land, and I do not support the recommendation of the Committee to reduce to Rs. 2'50 the rate of Rs. 3'00 proposed by the Settlement Officer for miscellaneous vegetable cultivation. The total assessment on solitary fruit trees at four annas per tree amounts to Rs. 1,263 only. The tax has been discontinued in the southern half of the district, and the same course might be followed here, or the tax, if retained, might be restricted to Tract 11B, which contains about one-half the total number of trees.

12. I propose that the settlement be sanctioned for a period of twenty years from the 1st July 1915. In the three circles for which the term of the current settlement does not expire until the 30th June 1916, the introduction of the revised rates will require to be postponed for one year. I agree with the Settlement Officer and Committee that some temporary postponement or concession should be given so long as the abnormal conditions and low prices resulting from the war continue to prevail.

13. Action will be taken under Lower Burma Land Revenue Rule 77 to give effect to the recommendation of the Settlement Committee that in Tracts 5B, 5C and 8D lands left fallow shall be assessed at the two-anna rate without application by the cultivator, subject to a limit of one-sixth of the holding in the case of a non-cultivator.

14. I concur in the commendation by the Settlement Committee of the efficient manner in which Mr. Jamieson has carried out the settlement and framed his Report.

H. THOMPSON, Financial Commissioner, Burma

MAYMYO, the 16th April 1915.

(5)

Tract.		Present demand	Proposed demand	Percentage of Increase or Decrease.
		Rs.	Rs	Rs.
١A		69,701	87,180	+ 25 08
2A		64,360	94,61 5	+ 48 56
3 A		17,286	\$3,088	+ 33'56
3B		16,275	24,410	+ 49'98
3C		18,1 27	23,262	+ 28.33
4B	<u>,</u> ,	54,277	77,110	+ 42.07
5B		92,181	1,23.835	+ 34'33
5C		12,643	14,234	+ 12.58
6A		19,367	25,285	+ 29'23
6 B		96 ,8 01	1,01,986	+ 5'35
7B		96,117	1,30,173	+ 35'43
8D]	6,389	10,625	+ 66'30
9B		48,858	50,017	+ 2'37
9C		97,095	1,18,801	+ 22.35
10B		\$3,070	32,051	+ 38.92
JoL		17,151	24,888	+ 45'11
11B		2,99,241	3,59,858	+ 20 22
11C		33,696	45,186	+ 34'09
12 B	•••	22,568	27,696	+ 22 73
Total		11,05,403	13,94,300	+ 26 13

Statement of Present and Proposed Assessment on Unirrigated Lice Land.

Proceedings of the Committee assembled at Bassein on the 21st and 22nd December 1914 to consider the Report of Mr. P. E. Jamieson .dealing with the third settlement of the northern or main portion of the Bassein District and with the first settlement of the western sea-board area.

MEMBERS OF THE COMMITTEE

1. LIEUTENANT-COLONEL F. H. ELIOTT. I.A., Commissioner,

Irrawaddy Division.

2. Mr. G. F. ARNOLD, BA., CI.E., I.C.S., Deputy Commissioner, Bassein District.

3. Mr. H. M. S MATHEWS, C S.I. Commissioner of Settlements and Land Records, Burma.

Mr. P. E. Jamieson, B A., I.C.S., Settlement Officer, has gone on leave and could not attend the Conference, but Mr W. M. B. Smart, Superintendent of Land Records, was present in order to help the Committee with Land Records statistics.

Review.

I The southern portion of the Bassein District was resettled by No. 4 Party under Mr. C H. Duffin in 1912-13 and constituted the first settlement circuit of the Bassein District

The report which the Committee is now considering deals with the second settlement circuit covering that portion of the Bassein District extending from Bassein Town northwards and including also the western seaboard. In the main block the present operations constitute a third settlement, the period of second settlement having expired in June 1914 except in a small block of a few thousand acres in the Ngathainggyaung Township where the second settlement does not expire till June 1916. The block to the west on the sea coast is now being brought under settlement for the first time. The town of Bassein lies on the border between the two settlement circuits and was to have been taken up by Mr. Jamieson but resurvey was necessary and as this could not be done in time the settlement of the town has had to stand over.

2. In the main block north of Bassein Town the occupied area has increased

Occupied area and waste. Paragraphs 2-7. by 31 per cent since the second settlement of 1899, while the figures in Statement 2 indicate that the increase in the area actually cropped has kept pace

with the area occupied. The population has also increased considerably though not so rapidly as the occupied area. Much of this main block is protected from inundation by the embankments on the north in the Henzada District and on the west along the Ngawun. In the flooded area outside and at the toe of this embankment natural reclamation is slowly taking place; lands which were formerly so deeply flooded as to be absolutely unculturable having now risen so much as to be culturable though the cultivation is precarious.

Throughout the main block the area is generally level and suitable for nice cultivation. Soils are mostly fertile but in the southern part of the circuit near the town of Bassein much of the soil consists of a sterile white clay which will only produce decent rice crops with systematic fallowing. The annual rainfall is about 100 inches and is ample for rice cultivation. Communications by rail and river are good. Potable water is obtained from wells and the area is a healthy one. In the area for first settlement on the sea coast conditions are very different. The slopes and spurs of the hills come down to the coast and the only level ground is found in a narrow strip along the sea beach and in confined valleys between the hills. The soil is fairly fertile and the rainfall copious, but communications are so bad and the area is so remote that it is difficult to dispose of any surplus crop grown by the meagre population The hills are covered with forests and the region is notoriously unhealthy affording few attractions to would-be immigrants.

3. The Divisional Commissioner and Deputy Commissioner note that the

Administrative Divisions. Paragraphs 1 and 2. machinery for administering the Bassein and Thabaung Townships is defective. The Commissioner considers that the figures showing increase of occutify the reconstitution of a Township, with headquar-

pied area and population justify the reconstitution of a Township, with headquarters at Kangyidaung, formed out of portions of the Bassein and Thabaung Townships. The Deputy Commissioner, however, thinks that the difficulty can perhaps be met by the appointment of an additional Township Magistrate and Judge at Thabaung.

4. In paragraph 8 Mr. Jamieson describes the system of embankments which Protective Embankments. Paragraph 8. Protective Embankment 20 miles southwards. Paragraph 8. Para

5 The railway opened since last settlement has, as pointed out by the Communications. Paragraph 9. Settlement Officer, enormously benefited the landlocked area between the Ngawun and Daga rivers. A further benefit to the district is that the railway

brings to the port of Bassein a large portion of the Henzada rice crop. The Committee agrees with Mr. Jamieson that the Ngathainggyaung-Kyonpyaw-Henzada road is an important thoroughfare which should be brought up to the requirements of the traffic it has to carry. It is understood that metalling is now going on between Ngathainggyaung and Kyonpyaw. The fact that the absence of a road bridge over the Daga at Kyonpyaw formed a serious obstacle to traffic was recognised in the Resolution of 1900 on the second settlement. No bridge has, however, been made and the Committee now suggests that if, for financial reasons, it is impossible to construct an iron bridge with sufficient headway for boats and steamers a fairly efficient substitute would be a bridge of boats which could be opened to pass boats and steamers. The Deputy Commissioner is taking action about the Kwingyi footpath to which Mr Jamieson refers.

In the seaboard area the Committee is of opinion that the interests of administration require the construction of a road through the hilly area which separates the headwaters of the navigable stream which runs into the Ngawun river on the east from the headwaters of the stream which discharges on the sea coast at Chaungtha on the west. This scheme has been No 2 (road Shangwin to Wegyi) on the programme of proposed roads for many years back.

The Committee recognises the menace to navigation of the Beda weed and trusts that some effective means of dealing with this plant may be devised.

The Committee agrees with Mr. Jamieson that the Yegalok shoal on the Daga river should be dredged and that the inlet to the Inye fishery should be examined. The Divisional Commissioner has submitted proposals to Government for provision of a dredger, for examination by an expert of shoals which block largely used navigation channels and fishery streams of the division, for classifying the channels as Provincial or District and for carrying out necessary dredging operations at the expense of these funds.

6. The population of the settlement circuit showed a satisfactory increase The People. Paragraphs 12-24. 50 rapid as it had been when immigrants were coming to take up waste land then available.

Burmans form the bulk of the population but Karens are numerous. The population is fairly dense east of the Ngawun river but to the west it is very sparse. Three-tourths of the people are engaged in agriculture. Fisheries give employment to considerable numbers and pottery is an industry of some importance in Bassein Town and in a few villages on the Ngawun river.

Since Mr. MacKenna recorded his enquiries at second settlement the agriculturist's cost of living has increased considerably and averages about Rs. 243 per family and Rs. 10 per acre. Most of this increase is due to a general rise in prices but there has also been a considerable advance in the standard of living. The people are usually well housed and purchase luxuries. The standard is highest in the Ngathainggyaung Subdivision and lowest on the western seaboard. Agricultural Libourers have a much lower standard of living than landowners and tenants but in this they do not compa e unfavourably with people of the same class clsewhere. Mr. Jamieson's figures show that only 36 per cent. of the landowners and tenants examined were in debt, a considerably lower percentage than Mr. MacKenna showed at second settlement, while the rate of interest has fallen On the other hand the individual debts are larger. Even admitting that Mr. Jamieson's figures understate the indebtedness it is clear that the agriculturists of the settlement area are not seriously embarrassed and that their financial position is not unsound. Mr. Jamieson's remarks in paragraph 24 on Co-operative Societies may be brought to the notice of the Registrar.

7. Ninety per cent. of the occupied area is cultivated with unirrigated winter Agriculture. Faragraphs 25-35. Manner though practically no use is made of cattle manure or other fertilizers. On the tadaungbo lands the early floods give little time for careful ploughing and the crop is broadcasted, but elsewhere ploughing is usually thorough and the rice is planted from nurseries. On the poorer lands near Bassein there is systematic fallowing. If deterioration of the soil under the present methods of cultivation is taking place it is very slow. Land newly broken up undoubtedly produces heavier crops in the early years of cultivation than it does later. The abnormal crops of the first few years soon drop but after this the further deterioration is usually so slow as to be imperceptible.

It is estimated that from the settlement area some 214,000 tons of unhusked rice, representing more than half the rice crop, is sent to Bassein for export. Apart from rice there are no staples of great importance. Plantains are found in most garden areas but it is mainly on the high lands of the upper Daga river that they are regularly grown for export to other districts. Tobacco is grown on the sandbanks of the Ngawun river, but it appears to be inferior to that of the Irrawaddy. Cocoanuts are exported to Bassein in small quantities from the western seaboard.

8. The cost of cultivation has risen largely since second settlement. Most Cost of cultivation. Paragraphs 42-44. Statements 12 and 12A. Of the increase is due to the enhanced value of paddy in which agricultural wages are largely paid but part of it results from the more extensive use of

hired labour. In the tracts where flooding does not give time for careful cultivation Mr. Jamieson has found that cultivation charges are appreciably less on land falling in his lower soil classes, but elsewhere no difference appeared between the cost of cultivating good and poor land.

Following the system laid down in paragraph 21 of the Settlement Instructions, Mr Jamieson in calculating the cost of cultivation for purposes of determining nett produce values has excluded the value of the work done by home labour and by home owned cattle. His calculations are shown in Statement 12 from which it appears that in the seaboard tract 8D the cost is only about Rs. 5-8 In other tracts it varies from Rs. 9-8 to Rs. 14 but in tracts 5B, 5C, 9B and 9C lower rates on the flooded third class soils have been deduced; these rates vary from Rs. 7 to Rs. 7-8.

The desirability of making a change in the prescribed method of calculating the cost of cultivation has been for some time under consideration and in Statement 12A. Mr. Jamieson has exhibited the result of including the valuations for home service. The rates calculated vary from Rs. 18 to Rs. 25, the mean cost for the whole circuit being Rs. 23. Mr. Jamieson points out difficulties in deter-mining the precise amount of work done by the cultivators themselves and decides not to use the figures arrived at in this manner. The Committee has not discussed this vexed question and accepts the ordinary calculations given in Statement 12. The following comparison between calculations made in Statements 12 and 12A and those appearing in the corresponding statement of Mr. Grant's Pegu Settlement Report of 1911-13 are, however, noted as they are interesting. The tracts compared appear to be very similar and the figures suggest that although cultivation may be more careful in Bassein the results arrived at in that district cannot be accepted without deductions to meet exaggerated estimates of home services. Bassein

						Dag		B -	•
	No. of	tract				IA		4A.	
	Area o	of holding, a	cres	•••		21	В	30	
	Standa	ard outturns	•	•••	: bas	kets 40, 30	and 20	40, 30 and	1 20.
	Chars			Excluding	g Allow- es.	Allowances labour and	for home d cattle.	Including	Allow-
				Bassein.	Pegu.	Bassein.	Pegu.	Bassein.	Pegu.
	1		-	2	3	4	5	6	7
				Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Seed				.72	•65			•72	•65
Cattle				3'17	3'37	4.66		. 7.83	3*37
Labour			•••	8.47	8.40	7*29	4.78	15'76	13.18
Implemen	nts			•53	.47	'		.23	'4 7
Huts and	byres	•••		.19	•27		·08	.10	'35
Irrigation	, etc.				20	.03		.03	'20
Other exp	oenditure				•26		•18		•40
		Total		13.05	13.62	11.98	5*04	25'03	18.62

Agricultural Loans, Paragraph 45

9. Very little use is made of the Agriculturists' Loans Act in Bassein although severe epidemics of cattle disease have at times produced the conditions under which such loans would appear desirable. The Settlement

Parti

Officer suggests that reluctance to take loans is sometimes due to the existing restrictions on the objects for which loans are admissible. The Committee thinks that additional admissible objects for loans might be prescribed such as re-roofing of dwelling-houses and payment of labourers. It is also suggested that as the pledging of gold is a usual form of security in private transactions it might be accepted for Government advances

10 The figures for cattle stocks quoted by the Settlement Officer in paragraph

Cattle and Grazing Grounds. l'aragiaphs 45-50.

47 suggest that although the stock has increased more largely than the cultivated area has extended the supply of plough animals is barely sufficient. As mentioned in the previous paragraph losses from disease have at times been

serious The provision of grazing grounds is liberal The Committee agrees that reserved grazing grounds should not be lightly abolished but thinks that something should be done to clear such grounds as have become impenetrable thickets and are therefore useless for graving purposes The Divisional Com-missioner suggests in such cases the issue of temporary cultivation leases to the cultivators for whom the pasturages were originally reserved This method was tried in Bassein some years ago and the only difficulty was in getting cultivators to take up solid blocks in the areas requiring improvement, cultivators generally wanting to take up narrow strips adjoining their holdings outside the grazing ground limits Where such temporary leases are issued it would be well to see that the grazing ground limits are permanently demarcated so that future disputes about boundaries may be avoided A similar suggestion for issue of temporary cultivation leases on overgrown areas in the l'egu grazing grounds was favourably considered in the resolution on Mr Grant's Settlement Report of 1911-13.

11 The size of the rice land holding tends to increase but the average holding is an area of under 16 acres and is much Land Rents, Sales and Mortgages smaller than in the districts further east The pro-Taragraphs 52-59. portion of area held by non-agriculturists is not large.

Mr. Jamieson gives the proportion as 1675 per cent of the occupied area and says that there has been a steady increase in the last four years The figures in Statement XII of the Land Revenue Administration Report are, however, 13:59 in 1910-11 and 14.34 in 1913-14, an increase of only '44 per cent.

About 40 per cent of the total rice land area is now rented against 25 per cent. at second settlement and the average rental value has risen from Rs. 585 to Rs. 9'06 per acre Mr. Jamieson considers that the position of the tenant is not satisfactory but the statistics do not suggest that rents are oppressive. The Settlement Officer's suggestion that landlords should be required to give their tenants leases would necessitate legislation and the change in the opinion of the Committee is not desirable. Sale and mortgage values have gone up largely since last settlement.

It should be remembered that the sale transactions recorded in the table under paragraph 59 are not the sales for one year but for three years. It has also to be noted that the mortgages recorded in Statement VII were collected by the Land Records staff and for recent years do not include usufructuary mortgages.

12. From Chapter V of the Report it is seen that with the exception of temporary set-backs due to cattle disease and Expiring Settlement. inundation there has been a steady advance in Paragraphs 60-67. occupied area and demand under the expiring settle-

ment. Land Revenue has been collected with ease and promptitude. The area under rice has increased by about 120,000 acres and under tobacco there is, an increase from 867 acres to 5,316 acres. The decrease under miscellaneous cultivation is more apparent than real being largely due to changed classification.

13. The Committee accepts the Settlement Officer's system of tracting. Twelve primary tracts in each of which general System of Tracting and conditions are more or less uniform have been Classification. Paragraphs 74-85. Maps 3 and 4. formed. Each of these primary tracts is a block of connected kwins except in two of the outlying tracts

where continuity is broken by an intervening unsurveyed area. A further division of the circuit is made into four price tracts differing from one another in the local

price of paddy. Combination of primary and price tracts produces nineteen assessment tracts. The price of paddy at Bassein is taken as Rs. 112 the average of 20 years' prices recorded in Statement 4 The allowances of middlemen's profits seem suitable. These when added to the cost of carriage represent the deduction made from the Bassein price in order to determine the tract price. The soil classification has been carefully done and the standard outturns are supported by crop measurements and cultivators' admissions.

14. In proposing rates of assessment Mr. Jamieson takes a much lower Rice Land Assessments. Paragraphs 73 and 86. Paragraphs 74. Paragraphs 75. Paragraphs 75. Paragraphs 75. Pa

tion in tracts where there is serious flooding or where the soil is inferior. In the seaboard tract specially low rates are proposed. The Committee accepts Mr. Jamieson's proposed rice land rates in 9 out of the 19 Assessment Tracts. In the remaining tracts 3B, 7B, 8D, 9B, 9C, 10B, 10C, 11B, 11C and 12B the Committee proposes some modifications which are set out in the following paragraphs.

15. Primary Tract 3 of which Assessment Tract 3B forms a portion lies on Tract 3B.
Paragraphs 91 and 93.
ward. Mr. Jamieson's rates are based on the small proportion of one-eighth of the nett produce but even so his demand is 42 per cent. above that of the expiring settlement. The second class soil is poor and a considerable portion is fallowed The Committee thinks that on this second class soil a rate of Rs. 1-81s high

			Rs
First class 5,200 acres at Rs. 2-12	.		 14,300
Second class 6,538 acres at Rs. 1-8		•••	 9,807
Proposed demand, total		•••	 24,107
Expiring demand, total			18,065
Enhancement, total			6,042
Enhancement, per cent.			 33

enough. The modified demand will be as follows :--

16. Although Tract 7B is a fertile and well situated tract in which the people Tract 7B. Paragraphs 103 and 104. Paragraphs 103 and 104.

A rate of Rs. 4-4 is recommended as suitable.

				115
First class 18,666 acres at Rs 4-4				79.330
Second class 15,094 acres at Rs 2-12	••	•••	••	41,508
Proposed demand, total			1	,20,838
Expiring demand, total	•••		•••	96,118
Enhancement, total				24,720
Enhancement, per cent		• •	×	20

17. Tract 8D is a remote and very backward tract on the western seaboard Tract 8D. which has now come under survey and settlement

Paragraphs 105 and 106. Paragraphs 105 and 106. pping of produce on the exposed coast is a difficulty and the owners of a few

shipping of produce on the exposed coast is a difficulty and the owners of a few sailing boats having a monopoly will not always carry grain unless an agreement is made for selling the cargo to them at an abnormally low rate. It has not been possible to ascertain the expiring demand with accuracy but it is estimated that at the Settlement Officer's proposed rates there will be an increase of 128 per cent. The Committee thinks that this enhancement is far too large although the expiring demand was probably unduly low. In place of Mr. Jamieson's rates of Rs. 2, Rs. 1-8 and annas 12 the Committee recommends rates of Rs. 1-4, annas 12 and annas 8. These rates are at present found under the expiring assessment in various kwins, but correct survey and the introduction of soil classification will give a considerable enhancement. Accepting Mr. Jamieson's figures for expiring demand the result is as follows :---Da

First class 2,824 acres at Rs 1-4			 3,530
Second class 5,034 acres at annas 12			 3,775
Third class 1,807 acres at annas 8		•	 903
Proposed demand, total			 8,208
Expiring demand, total	••	•••	 6,389
Enhancement, total	•••		 1,810
Enhancement, per cent.		•••	 28

18. In Tract 9B Mr. Jamieson's proposed rates of Rs. 4-12 on first class soil and Rs. 3-4 on second class soil are above the stan-Tract 9B.

Paragraphs 107 and 108.

dard of one-sixth of the nett produce value. The Committee thinks that rates of Rs. 4-8 and Rs. 3 are

sufficiently high. The highest rate under the expiring settlement is Rs. 3-8 and there would be a large enhancement but for the fact that a large flooded area on which tadaungbo is grown was classified by the surveyors in the first class but has now been placed in the third class. Mr. Jamieson proposes a rate of Rs. 1-12 for his third class land but the Committee thinks that it can pay Rs 2. It should be noted that Mr. Jamieson has given his total proposed demand as Rs. 43,691 but according to Statement 19 it should be Rs. 47,270 The results of the modifications now recommended are as follows :---Rs.

First class 3,939 acres at Rs 4-8				17.725
Second class 6,218 acres at Rs 3	38		•••	18,654
Third class 4.771 acres at Rs. 2		٠	•••	9,542
Proposed demand, total				45.921
Expiring demand, total		20	••	48,854
Reduction, total		••		2,933
Reduction, per cent.	••		•••	6

19. Tract qC is in the same primary tract as 9B, and only differs from that tract in the price of paddy. For the reasons given Tract of. in the previous paragraph the Committee recom-Paragraphs 107 and 109. mends rates of Rs. 4-4, Rs. 2-12 and Rs. 1-12. The

result is as follows : --

			113
First class 16,066 acres at Rs. 4-4	•••		 68,280
Second class 10,671 acres at Rs. 2-12			29,345
Third class 7,246 acres at Rs. 1-12	***	•••	12,680
Proposed demand, total			 1,10,305
Expiring demand, total		••	97,095
Enhancement, total			 13,210
Enhancement, per cent	•	•••	 14

20. For reasons which the Committee thinks sufficient Mr. Jamieson bases his

Tract 10B. Paragraphs 110-111 proposed rates in Tract 10B on a low standard of one-eighth of the nett produce. Even so, however,

D.

The Committee notes that there is little export of paddy from this tract, that rice land is liable to flooding, the holdings are small and the people poor. Under these circumstances the Committee thinks that Mr. Jamieson's proposed rates of Rs. 3-12 and Rs. 2-8 on first and second class land are too high and suggests the substitution of Rs. 3-4 and Rs. 2-4. The result is as follows :-

		Rs.
First class 2,585 acres at Rs. 3-4	 200	8,401
Second class 6,020 acres at Rs. 2.4	 	13,545
Third class 4,871 acres at Rs. 1-8	 •••	7,306
Proposed demand, total	 	39,352
Expiring demand, total	 •••	23,070
Enhancement, total	 	6,182
Anhancoment, per cent.	 	27

21. Tract 10C is in the same Primary Tract as 10B and for the reasons given Tract 10C. Paragraphs 110-112. and Rs. 2-4 giving the following results :--

			RS.
First class 2,783 acres at Rs. 3			8,349
Second class 5,012 acres at R5. 2	 		10,024
Third class 3,096 acres at Rs. 1-1	 •••		3,870
Proposed demand, total	 		33,243
Expiring demand, total	 •*	•	17,151
Enhancement, total	 		5.092
Enhancement, per cent.	 		30

22. Tract IIB is the largest and the most important tract of the settlement Tract IIB. Paragraphs II3 and II4. thinks that Mr. Jamieson's 1st class rate of Rs. 4-8 is pitched too high and recommends its reduction to Rs. 4-4. The modified demand will then be as fol-

D.-

R.

			NS.
First class 32,688 acres at Rs. 4-4			1,38,924
Second class 46,801 acres at Rs. 3-4			1,52,103
Third class 30,329 acres at Rs. 1-12	•••		53,076
Proposed demand, total			3,44,103
Expiring demand, total		•••	2,99,241
Enhancement, total			44,862
Enhancement, per cent,			15

23. Tract IIC is in the same primary tract as IIB and for the reasons given in the previous paragraph the Committee recommends

flatt flo.	the	substitution	of a	first	clas	s ra	te of F	25. 2-12	for
Paragrophs 113 and 115.	Mr.	Jamieson's	rate	of	Rs.	4.	This	gives	the
following demand :		5					Rs	.,	

First class 6,027 acres at Rs. 3-12				22,601
Second class 5,506 acres at Rs 3		•••	•••	16,518
Third class 2,280 acres at Rs. 1-8		•••		3,420
Proposed demand, total				42,539
Expiring demand, total	••			33,696
Enhancement, total				8,843
Enhancement, per cent.		•••		26

24. Although Tract 12B is a good tract the Committee thinks that Mr. Tract 12B. Paragraphs 116 and 117. Paragraphs 116

of Rs. 4-12 and Rs. 2-12 giving the following results :-

First class 4,119 acres at Rs 4-12		 	19,565
Second class 2,185 acres at Rs. 2-	12	 ••	6,008
Despaced Jamand Asial			
r ropused demand, total	••	 	25.5/3
Expiring demand, total	••	 	22,568
Enhancement, total		 	3,005
Enhancement, per cent		 	13

25. Mr. Jamieson's proposed rate of Rs. 2-4 on *mayin* or spring rice cultiva- *Mayin* or Spring Rice. *Paragraph 118. Paragraph 118. Paragraph 118. Paragraph 218. Paragraph 218.*

Most of this cultivation is found in Tract 5B but a little mayin is cultivated else-

where. The rate may be a crop rate levied wherever mayin is found in the settlement circuit.

26. Except in Tracts 8D, 10B and 10C, the different kinds of orchard gardens have not been differentiated for purposes of assess-Gardens. ment. The unclassified orchard gardens include those under pineapple and except in Tracts 10B and Paragraphs 119-130. 10C they also include plaintains. They are shown as "Garden unclassed" in Statement 19. In the hilly tracts 3A, 3B and 3C and in the flooded tracts 5B and 5C, Mr. Jamieson proposes a rate of Rs. 2-4 on these unclassed gardens. Elsewhere his proposed rate is Rs. 3. Under the expiring settlement these gardens when cultivated with plantains or pineapples pay Rs. 3 while mixed gardens pay Rs. 2-8. The Committee thinks that Mr. Jamieson's proposals for these gardens may be accepted. In Tract 8D on the western seaboard two classes of gardens have been formed, first class, cocoanuts, with a proposed rate of Rs. 3 and second class, other gardens, with a rate of Rs. 1-8. Here the Committee thinks that differentiation is unnecessary and recommends an all-round rate of Rs. 1-8 on all gardens. The tract is remote and the prospects of early development are small. Even if cocoanut plantations are started on a large scale during the new settlement the low rates now recommended would be suitable for pioneer efforts. The Committee's recommendation in Tract 8D works out as follows :--

				115.
Gardens 1,060 acres at Rs	. 1-8			 1,590
Proposed demand, total				 1,590
Expiring demand, total	•••		3000	 841
Enhancement, tota	1	•••		 749
Enhancement, per	cent.		•••	 89

n

In Tracts 10B and 10C plantains are largely grown for export. As explained in paragraph 123 plantain cultivation in these tracts follows a generally observed rotation. It commences on new land with a period during which superior plantains are grown. Inferior but hardier plantains are then substituted for a further After this the land lies fallow but grows a spontaneous crop of thekke period. or thatching grass for some years when it is again brought under regular cultivation with a field or vegetable crop. This may be said to commence the later rotations which run from field crops to inferior plantains and then fallow with thekke. In these two tracts Mr. Jamieson proposes a crop rate on plantains of Rs. 3. In the interval when the land is fallow but produces thekke and when it is under field crops the Settlement Officer's proposal is that the land should pay a rate of At present it pays Rs. 3 but this certainly appears excessive for land Rs. 1-8. which as Mr. Jamieson says is very similar to third class rice land. The Committee thinks that the Settlement Officer's proposals in these tracts are suitable and recommends their acceptance.

27. According to paragraph 129 Mr. Jamieson's complete proposals for Thekke Paragraph 129. Rs. 1-8. The Committee, however, recommends that a uniform crop rate of Rs. 1-8 may be levied on thekke wherever it is found. It is not clear whether

there is any *thekke* in the four tracts now mentioned, but if there is the area is small and this recommendation will scarcely affect the financial results.

28. For miscellaneous vegetable crops Mr. Jamieson proposes a rate of Rs. 3 in all tracts except in the seaboard Tract 8D, where a rate of Rs. 1-8 is recommended and in Tracts roB and 10C where vegetables enter into the plan-

tain garden rotation bearing the same rate of Rs. 1-8. The present rate on vegetable gardens is Rs. 2-8 and the Committee thinks that this rate is suitable and should be retained except in Tracts 8D, 10B and 10C, where reasons have been given for applying the lower rate of Rs. 1-8.

(10)

29. The Committee recommends the acceptance of Mr. Jamieson's proposed rates of 4 annas on solitary fruit trees and Rs. 10

Other Crops. Solitary Fruit Trees. Betel-vine. Paragraphs 131 and 132. rates of 4 annas on solitary fruit trees and R per acre on betel-vine.

12-

30. Regarding sugarcane the Settlement Officer explains that it is mainly Sugarcane. Paragraph 133. board Tract 8D, where he proposes Rs. 1-8-0. The Committee supports this

31. From paragraph 67 of the Report it is seen that the area under tobacco has increased enormously during the currency of the expiring settlement. Nearly all the tobacco is found on the banks of the Ngawun river in Tract 5B. The

crop appears to be inferior to that grown on the Irrawaddy but the figures given by Mr. Jamieson and the expansion of area indicate that the present rate of Rs. 2-8-0 is low and may be enhanced. Mr Jamieson proposes a rate of Rs. 4 but the Committee thinks that this produces too large an chancement and for this reason and because the cultivators are poor the Committee recommends a rate of Rs. 3-8-0 except in the seaboard Tract 8D, where tobacco if grown should come under the Rs. 1-8-0 rate of miscellaneous vegetable crops. The result of the Committee's recommendation would be as follows :---

							1.3.
Trac	t 3C	 6	acre	s at P	s. 3-8		21
"	5 B	 5,285	"	"	"	••	18,497
	11B	 5	"	"		•••	17
"	12B	21	"	**	,,		73
		Propose	d de	mand	total		18,608
		Expiring	g de	mand	, total		12,897
		Enhance	emer	it, tota	ıl		5,711
		Enhance	eme	nt, per	cent.		44

	Tract.		Rs,	
Unirrigated Rice Land	1A 2A 3B 3C 4B 5C 6A 6B 7B 8D 9B 0C 10B 10C 11B 11C 12B		88,022 89,932 22,968 24,107 23,504 74,224 1,26,007 14,554 25,327 97,267 1,20,838 8,208 45,921 1,10,305 29,252 22,243 3,44,103 42,539 25,573	Settlement Officer's proposal. Amended by Committee. Settlement Officer's proposal. Amended by Committee.
	Total	•••	13,34,894	
Isrigated rice Gardens including Thekke Tobacco	···· ····	 	6,194 85,194 18,608	Settlement Officer's proposal. } Amended by Committee.

Miscellaneous		•••	 6,612)
Sugarcane			 577	
Betel-vine			 1,257	Settlement Officer's proposal.
Dhani			 2.007	
Solitary fruit trees	•••		 1,263	j
Proposed demand, g Current demand, gr	rand total		 14,56,606 12,24,406	
Enhancement, total Enhancement, per c	cent.		 2,32,200	
			1.23	826 IS 022VI 53

(11)

The application of the rules about intermediate rates will reduce the immediate enhancement.

33. Paragraph 144 of the Report shows that in the year of settlement nearly 20,000 acres were fallowed and that the fallow concession of 2 annas was obtained on about 7,000 acres. The Committee supports Mr. Jamieson's

recommendation that the notification under Rule 77 should be extended to fallow areas in Tracts 5B and 5C. The Committee recommends the notification of Tract 8D, which belongs to the Thabaung and Ngaputaw Townships. In this tract about one-eleventh of the rice land was left fallow in the year of settlement and it is obvious that from this remote area cultivators cannot be expected to make applications for the concession.

34. In paragraph 146 Mr. Jamieson comments on the work of the Land Land Records Work. Paragraph 146. Records staff. Action was taken to improve the revised area statements, prescribed by paragraph 675 of the Land Records Manual, which in the first

year were so faulty. The officers responsible were censured and their successors were required to devote more attention to this work. As regards the alleged insufficiency of chainmen for revision survey work it is noted that within the limits of the district allowance for chainmen the local officers are empowered to distribute the men as required and can therefore give sufficient chainmen to surveyors when actually doing revision survey work. The question whether revision survey work is beyond the powers of the local staff is considered annually and if necessary arrangements are made for the employment of the special survey party or a special local staff.

35. The Committee recommends that the settlement be sanctioned for 19 Duration of Settlement. Paragraph 148. Thinks that the introduction of the new settlement should be postponed. In the southern part of the district Mr. Duffin's settlement was sanctioned for 20 years with effect from the 1st July 1915, both settlements will expire together in June 1934.

36. Mr. Jamieson has, in the opinion of the Committee, written an excellent General. Paragraph 149. in the opinion of the Committee, written an excellent report and has effected a satisfactory settlement. His proposals are supported by well reasoned arguments and the Committee has had no hesitation in

accepting them generally although minor modifications of rates have been recommended in some cases. The Commissioner of Settlements and Land Records endorses Mr. Jamieson's appreciation of Maung Po Thaung's work and asks that a note of his good services may be made in the Appointment Department.

H. M. S. MATHEWS,

ALLANMYO: 18th January 1915. Commissioner of Settlements and Land Records, Burma.

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Map 1 .- Topographical Map facing first page.

Map 2.—Showing administrative divisions (in pocket).

Map 3 .- Showing primary and price tracts (in pocket).

Map 4 .- Showing Assessment tracts (in pocket).



6.8 C.P.O.-No. 2018, C.S.L. R., 29-31015-200 2.

REPORT

ON THE

Operations of Third Settlement in the Thabaung, Kyaunggon, Kyonpyaw and Ngathainggyaung Townships, and in part of the Bassein Township

TOGETHER WITH THE

First Settlement of newly surveyed areas in the Thabaung • and Ngaputaw Townships

OF THE

BASSEIN DISTRICT,

SEASON 1912-1914.

CHAPTER I.-THE COUNTRY.

I. This report deals with third settlement operations in the Ngathainggyaung, Situation and Administrative Divisions. Topographical Map. and Ngaputaw townships have been settled for the first time. The remainder of the district has been dealt with by Mr. C. H. Duffin, whose report was submitted

in November 1913.

Below is given a statement showing the area and administrative divisions of the tract dealt with by this party :---

	and a second	Village	Num Ku	ber of vins.	Ar	ea.	Thickly populated	Å	rea.
Subdivision.	Townships.	Number of tracts.	rst Settle- ment. 3rd Settle- ment.		Gross,	, Occupied,	areas surveyed on the scale of 64 inches to the mile.	Gross.	Occupied.
The state of the s	2	ż	4	5	6	7	8	9	10
	Contraction of the		-		Acres.	Acres.		Acres	Acres
1.10.20	Ngathaing-	150		217	213,333	108,503	Ngathainggyaung	1,612	939
Ngathaing- gyaung.	Kyonpyaw	118		129	185,130	122,015	Yegyi Village	519	258
	Kyaunggon	85		88	185,643	109,257	Kyonpyaw Notified A rea.	489	179
- Aller	Thabaung 4	106	21	292	205,239	82,822	Kyaunggon Village	755	402
Bassein {	Bassein	94		109	1 55,507	98,268	Kangyidaung Village	743	415
to a struct	Ngaputaw	15	67	•••	19,912	7,971	and the state		
	Total	568	88	835	964,764	528,836	Total	4,118	2,195

Rates are also proposed for 2,239 acres of mayin cultivation not under cadastral survey in the Kwinhla circle of the Thabaung township. The total occupied area dealt with is therefore 533,268 acres. The area for third settlement is a compact block comprising the whole of the cadastrally surveyed portion of the Bassein district lying to the north of Bassein town and to the east of the Arakan Yemas. In the north it is bounded by the Henzada district, in the east by the Ma-ubin and Myaungmya districts, and to the west by the foot hills of the Yomas. In the south the boundary is an arbitrary line fixed by the Commissioner of Settlements and Land Records with a view to the convenient distribution of work between Mr. Duffin's party and this one. It consists of the southern boundary of the Shangwin, Kyaukchaunggyi and Kyun-chaung revenue surveyors' charges.

Under the orders of the Commissioner of Settlements and Land Records the Bassein town lands with a total gross area of 8,083 acres have been excluded from the present operations pending resurvey and recalculation of field areas.

The area for first settlement is somewhat awkwardly situated and consists of a long narrow line of scattered patches of cultivation between the Arakan Yomas and the Bay of Bengal. These extend for a distance of roughly 100 miles from Cape Negrais almost to the boundary of the Sandoway district.

2. The following table shows the proportion borne by occupied to gross area

Waste.

Statements 1 and 1a.

in 1899 and 1914 in the area for third settlement, together with the estimated amount of culturable waste still available. The mayin area of 2,239 acres outside supplementary survey has been excluded from this table —

Township.	Occupied area at 2nd Settlement.	Percentage of gross area.	Occupied arca at 3rd Settlement	Percentage of gross area	Cultu. able waste remaining.	Percentage of gross area
	 2	3	4	5	 0	7
	Acres		Acres.		Acres.	
Bassein	82,203	52.42	98,683	63.15	10,659	6.82
Thabaung	 48,639	24 82	79,830	40.53	51,032	25 91
Kyaunggon	82,114	39.20	109,650	58.83	19,301	10'35
Kyonpyaw	93 .9 87	49.23	122,194	65 83	18,185	9'79
Ngathainggyaung	88,685	41 13	109,700	50 91	45,519	21 12
Total	 395,628	40.84	520,066	55'28	144,696	15.38
				L		1

Since second settlement in 1899 the occupied area has increased by 124.438 acres or 31 per cent., while the population has only increased by 17 per cent The flooded portions of the Thabaung and Ngathainggyaung townships are the only areas in which any large amount of culturable waste remains, and perhaps some explanation is required of the fact that the culturable waste in both townships exceeds the amount estimated at previous settlement. The reason is the remark-able extent to which flooding has abated both in length and severity during the last 15 years, thus rendering it possible to raise a precarious crop on land formerly inundated to the depth of many feet. Much of this waste was formerly cultivated but was abandoned owing to the heavy flooding consequent on the construction of the Ngawun embankment and is now a flat level plain covered with elephant grass and reeds. Though the soil is fertile, flooding is still sufficiently severe to render cultivation a highly speculative proceeding, but if inundation continues to decrease in the future' as it has in the past, the new estimate of culturable waste may in turn prove to be too conservative. The available area elsewhere is both limited in quantity and poor in quality, and consists either of very high land which it would barely pay to cultivate or of scattered odd pieces inconveniently situated for working.

In the area for first settlement only existing cultivation and the land immediately adjoining it have been brought under supplementary survey, and the culturable waste amounting to 8,600 acres out of a gross area of 28,214 acres cadastrally surveyed represents therefore but a small fraction of what is available in the unsurveyed portions of the area. Near Ngayokkaung village, for instance, there are several thousands of acres of black mud at present covered with mangrove jungle and partially submerged by the sea at high tide, but if sufficient capital were available to clear and bund this land, it would become probably the most fertile in the district. It is, however, unlikely that any great expansion of paddy cultivation will take place as this portion of the district is remote, unhealthy and sparsely populated. Ample space is also available in the same area for the successful exploitation of cocoanut and betelnut, but for the same reasons, no great development of these latent resources is to be expected.

3. The area for third settlement is a flat alluvial plain rising slightly in the

Physical Features.

north towards the border of the Henzada district,

hood of Bassein town which is built on an outcrop of laterite. It is devoid of any striking physical features except on the western boundary, where the Arakan Yomas rise to a height of some 1,500 feet. The area is drained by the Ngawun and Daga rivers which unite 13 miles above Bassein town. The chief tributaries of the Ngawun are the Tabu, Shwenyaungbm, Kyaukchaunggyi and Thandwe streams while the Yegyi and Minmanaing creeks are the main tributaries of the Daga. Besides the above there are numerous small intercommunicating tidal creeks in the Bassein and Thabaung townships many of them navigable by small paddy boats.

The lnyè lake, seven miles in circumference and in parts fifteen feet deep in the dry weather, is important as being the largest and one of the most valuable leased fisheries in Lower Burma The Lahagyi lake on the right bank of the Ngawun in the Thabaung township is a long narrow stretch of water ten miles long by a mile broad, but is so shallow as to permit of extensive mayin cultivation.

The narrow strip lying between the Arakan Yomas and the Bay of Bengal forming the area for first settlement is much more uneven Cultivation is found in small patches separated from each other by spurs from the main range of the Yomas and by jungle, the country is wild, undeveloped and sparsely populated, and the sandy beach forms the main line of communication The coast is very dangerous, shoals and reefs run several miles out to sea, and even in the dry weather light draught boats cannot come close inshore

4. To the east of the Arakan Yomas extension of cultivation has resulted in

Forests. Forests. the almost complete disappearance of forest growth except in the Shwemyindin circle, and even there the little that remains is rapidly diminishing owing to extensive extraction for domestic use. True forest is now confined to the immediate vicinity of the Yoma watershed. These forests are mainly of the deciduous type, but from a revenue point of view are not very valuable. Teak is hardly found at all and *pyinma* and *pyinkado* occur in small quantities only. Extraction is difficult and is practically limited to the eastern slope of the Yomas, the timber being floated down to the Ngawun by means of bamboo rafts.

I am indebted to the Divisional Forest Officer, Mr. Lawrence, for the following figures showing the quantity extracted during the past three years :--

Year.	Kind of timber.				Tons.
	CReserved woods	•••		•••	2,869
1909-10	Unreserved woods				5,875
1910-11	Reserved woods	•••	•••	•••	3,883
	Unreserved woods	•••			8,713
1911-12	Reserved woods	•••	•••		3,205
	" Unreserved woods		•••		5,993

In addition to the above large quantities of bamboos averaging 3,357,000 annually are extracted for domestic use and for the requirements of mills and shipping in Bassein.

Existing reserves have an aggregate area of 528 square miles and an additional area of 70 square miles is in course of settlement. All these reserves are on the Yoma watershed except a small fuel reserve of 11 square miles in the Shwemyindin circle.

The consequences of the rapid denudation of forests have at last begun to be felt by the people and complaints are beginning to be heard of the growing scarcity of fuel. During the last two or three years many cultivators have been compelled to buy fuel imported from the sea coast, while others have laid reserved grazing grounds under contribution. This latter practice would perhaps be the better for regulation, as on the one hand cattle require shade as well as food and water, and on the other hand grazing grounds should not be allowed to become impenetrable thickets. However, the fuel question does not seem likely to become of urgent importance in the immediate future owing to the existence of ample, though perhaps not inexhaustible, supplies outside the settlement area.

5. To the east of the Yomas the prevailing soils are either clays or clay loams of varying colours and degrees of stiffness.

Intrinsically the most fertile is perhaps a brown clay loam found in the Mobya circle of the Kyaunggon township and the Bokchaung circle of the Ngathainggyaung township. This soil is easy to work, retains moisture well and shows no sign of exhaustion. Mr. Bridges also remarked on the great natural fertility of the soil in the large flooded area of the Thabaung This is somewhat lighter in appearance and contains a large proportownship tion of sand or silt, but since the construction of the Ngawun embankment, cultivators cannot work it till too late in the season The soil of a sandy ridge in the north of the district is too porous to be generally suitable for paddy cultivation and forms the garden tract of the settlement area. A contrast to the last mentioned is a very stiff dark clay found occasionally in very lowlying land liable to inundation. When new this soil gives excellent crops, but it is difficult to work and does not long retain its fertility. The worst soil, however, is a shallow white clay overlying grit or laterite and characteristic of the plain round Bassein town. Even when new this soil was probably somewhat sterile and its defects have been accentuated by continuous working. It is now completely exhausted, and unless the higher land is systematically fallowed, it is more prolific of shwelanbu weeds than paddy. A peculiar soil known locally as put-kyi-mye is found on the eastern boundary of the Bassein township. It is a very dark friable clay and up till the last ten years was unworkable owing to inundation It is now yielding heavy crops, but cultivators suspect its lasting power and think it has already begun to deteriorate

To the west of the Yomas the soil chiefly found is a light sandy loam owing much of its fertility to jungle drainage.

6. Throughout the greater part of the settlement area the water-supply is good and sufficient, being derived from wells the Water-supply. G majority of which are lined with brick and have substantial parapets. River water is only drunk in the inundated area of the Thabaung township, where the height of the flood renders the construction of wells useless. It is perhaps a fortunate circumstance that river water is not generally drunk, as village latrines are frequently constructed to overhang the In the south-east of the Bassein township also, the water-supply is river bank somewhat unsatisfactory, as the subsoil water is brackish and the village tanks for collecting rain water are apt to dry up in April. Nevertheless, the area for third settlement is on the whole healthy and there is little or no epidemic disease. The area for first settlement on the west coast is terai country and is most unhealthy and feverish, especially at the beginning and end of the rains. Though plentifully

supplied with quinine, not a single man of the Settlement staff working there escaped fever, several had to take sick leave, and two men died.

7. The statistics of rainfall reproduced from the Burma Gazette in Statement

Rainfall and Inundation.

Statement 8.

8 exhibit some curious fluctuations and probably only the Bassein figures are reliable. Thus in 1911 the rainfall of Kyonpyaw is said to have been double that of Kangyidaung and 57 inches in excess of by to miles away : again in 1907 Kyonpyaw is said to

that at Ngathainggyaung only 10 miles away; again in 1907 Kyonpyaw is said to have had nearly twice as much rain as Ngathainggyaung. Disregarding these abnormal figures, it may be said that the rainfall is sufficient and regular 100 inches being approximately the normal amount over the whole area.

As regards liability to inundation the settlement area is characterised by very varying conditions, ranging from absolute immunity in the north of the district which is protected by the Ngawun and main Irrawaddy embankments, to land, hopelessly flooded, every year in the Thabaung township. In this latter area the water from the Ngawun sweeps round the end of the embankment near the Tabu stream and converts the centre and south of the township into a broad inland sea 20 feet deep in places. Local cultivators recognize three rises of the Ngawun, the first two occurring with fair regularity in June and August, while the third occurs in October, but is more uncertain and in exceptionally favourable years does not take place at all. This third rise known as pe-ko-yé or "flood that steals the peas" is the one to be feared, and cultivators are annually faced with the unpleasant alternatives either of planting early and risking total destruction by the third rise, or of planting late and trusting to rain in November to save the seedlings from withering. Portions of the Bassein township also are liable to occasional flooding but of a much less severe and prolonged character.

Though a considerable proportion of the settlement area is thus exposed to inundation, a general idea prevails amongst cultivators that the level of the ground is gradually rising, and that flooding is slowly becoming less severe than formerly. This theory is supported by numerous indications all pointing in the same direction. For instance Mr. Lowry in 1898 remarked that the water in a shallow depression in the Mobya circle was less deep than it used to be, but recommended a drainage scheme. Though nothing was done, the water has receded still further in the past 15 years, and villagers are beginning to complain of their former grazing area being unduly restricted by extensions of paddy and tadaungbo cultivation. Ag in, the silting up of streams such as the Kyeinchaung, the Zechaung and the Tabu is significant. The Kyeinchaung used to connect the Daga with the Ponmawaddy, but now through communication is only possible at the height of the rains and then with difficulty. Again small launches used to run on the Tabu chaing, which was also the chief export route for paddy grown in the neighbourhood of Athok. Now not even a sampan can get through except in the rains, thus enabling the railway company to charge higher freight rates from Athok than from stations more distant from Bassein. The reduction in the number of kadon fisheries that is to say of flooded plains in which fishing rights are leased, from 47 in 1905 to 32 in 1913 may also be mentioned. Finally in the Thabaung township much land formerly absolutely unculturable is now under the plough though the cultivation is undoubtedly precarious. In this township extension of cultivation has been further accelerated by the annual deposits of silt brought down by the Ngewun in flood, and in the opinion of the Executive Engineer of the Embankment Division the idea that the volume of water in the Ngawun has decreased is mcorrect. He thinks the channel may be scouring out, but he points out that high flood levels observed at Zibyugwin, 20 miles below Ngathainggyaung, have not fallen since 1900.

8. The whole of the Ngathainggyaung township, as also the north-western part of the Thabaung township, are protected from flooding by the Ngawun embankment built and maintained by the Public Works Department. The total length of this embankment

from Henzada to its present terminus $3\frac{1}{2}$ miles north of the Tabu chaung, is $75\frac{1}{2}$ miles of which 34 miles fall within the Bassein district. Originally begun in 1861 by Colonel Short, the bund was under construction till the year 1884, when the last section up to the mouth of the Tabu chaung was completed. An eventual extension to the mouth of the Daga chaung was contemplated, and on the advice of the Embankment Engineer, Mr. Gordon, orders had actually issued for the continuation of the bund to the mouth of the Shwenyaungbin chaung, accompanied by the closing and diversion of the Tabu chaung during the year 1885. However in that year the embankment was severely breached higher up stream, and the last $3\frac{1}{2}$ miles north of the Tabu chaung remain abandoned till the present day. Since that date expert opinion as to the advisability of extension seems to have varied considerably, and it was thought that prolongation to the Daga would merely result in throwing the water on the Kyaukchaunggyi and Shwemyindin circles, and might even endanger Bassein town.

During 1913 Mr. Barnett, Executive Engineer then in charge of the division, put forward a modest proposal to repair the 31 miles abandoned in 1885 and 10 bring the embankment down to the mouth of the Tabu chaung. The fall in the river level at this point is slightly over 6 inches a mile and the effect of the extension would be to lower the intake by 2 lect. As the land in the interior is much lower than high flood level at the mouth of the Tabu chaung, the proposal seems somewhat dubious and unlikely to lead to any large extension of cultivation. The only measure likely to have any permanent effect seems to be to complete the embankment to the mouth of the Daga. Until the high flood level at the mouth of the Daga is accurately known, and until lines of levels have been taken over the area to be protected, it is of course impossible for any estimate to be reliable but the following very rough statement of the possible effect of this project may be of interest. The effect on fishery revenue would be disastrous, 20 fisheries with revenue in 1914 of Rs. 4,590 would disappear, 133 more would deteriorate to the extent of two-thirds of their present value with a loss of Rs. 66,586, and another 83 be effected to the extent of half their value equivalent to a loss of Rs 34,135. This estimate has been made in consultation with the Inkunaum of the district and is perhaps a little generous. The possibility that extension of cultivation and increase of population may raise the price of fish and enhance the value of the remaining fisheries must not be overlooked. The extension of the embankment would also throw perhaps 2,000 acres out of cultivation in the Thabaung and Thanlyetsun circles on the right bank of the Ngawun, and the demand on another 4,885 acres would have to be reduced. The net result would be an approximate loss in land revenue of Rs. 8,200.

On the credit side at a very conservative estimate 40,000 acres would be brought under rice. This land is fertile and flat and could easily bear rates of Rs. 3'75, Rs. 2'75 and Rs. 1'75 per acre. Assuming that one-quarter of this area fell into the first soil class, and the remainder was equally divided between the second and third classes, the resultant revenue would be Rs. 1,05,000. The effect on existing cultivation would also be very great and a re-settlement of the flooded area could equitably and profitably be undertaken. It is difficult to estimate the probable result of such a re-settlement but land would be raised in class and higher rates would undoubtedly be imposed. The following table is an attempt at such a forecast.

Claccification and	revenue	rates	proposed	under	present	conditions.
--------------------	---------	-------	----------	-------	---------	-------------

Class 1.		Class 2.		Cla	ss 3.		
Acres.	Rate.	Acres.	Rate.	Acres.	Rate.	lotal demand.	
	- Ks	1	Ks.		Rs.	Rs.	
9,174 {	3 50 3'25	31,580	2°25 2'00	26,859	{ 1.20 1.25	} 1,38,073	

(lass 1.		Class	5 2.	C1	ass 3.		
Acres.	Rate	Acres.	Rate.	Acres	Rate.	lotal demand.	
		,		1			
	Rs		Ks.		Rs.	Rs	
16,903	3'75	25,355	2 75	25,355	1.75	1,90,161	
				1	\$2		

Classification and revenue rates if bund were extended

Tabulating the profit and loss .

	Loss.			Profit.		
			Rs			Rs.
By fishery revenue			1,05,311	By extension of cultivation		1,05,000
By flooding on right	t bank of the	Ngawur	n 8,200	By re-settlement of flooded area		. 62,088
			1.13.511	Total		1,67,088
Balance			53 577	34036428851		
	Total		1,67.088			
				! =	1	-

The distance between the present terminus of the bund and the mouth of the Daga is 20 miles if the bends of the river are followed Assuming the cost of construction to be Rs 15,530 per mile, the project would cost Rs. 3,10,600, and the net gam in land revenue would be equivalent to a return of 17 per cent on the capital cost.

No direct revenue is derived by the Public Works Department from the bund, all charges being defrayed by the provincial funds. The cost of construction was, as far as can be ascertained, roughly Rs. 15,530 per mile and maintenance charges average Rs. 302 per mile. On the whole these latter are not heavy, though breaches occurred in 1877, 1880, 1885 and 1888 and anxiety was felt in 1891. Quite recently also the behaviour of the river near the town of Ngathainggyaung has been disquieting and expensive retirements there are in course of construction. The cultivated area protected by the bund in the Bassein district is estimated at 49,020 acres with land revenue of R.s. 1,48,603. Against this must be set the fact that the embankment has injuriously affected the south portion of the Thabaung township and Mr. Bridges in 1884 estimated that 32,000 acres of very fertile land had been either abandoned or rendered precarious by flooding A further large area in the east of the Kyonpyaw township estimated at 54,673 acres with a land revenue of Rs. 1.49.319 is protected by the embankment along the main Irrawaddy river in the Henzada and Ma-ubin districts. Allowing for the fact that without the embankments precarious cultivation might conceivably exist over one-third of the area protected there can be no doubt of the financial success of both undertakings.

9. Owing to the numerous waterways and creeks in the south of the settlement area communications there may be described as fairly satisfactory. The Irrawaddy Flotilla Company maintains a daily service on the Ngawun between Ngathaing-yaung and Bassein, and also on the Daga between Kyonpyaw and Bassein These services are supplemented by so-called Chetty launches owned by Indians and plying between the larger villages not only on the main rivers but also on nearly every navigable side creek. These launches carry passengers only, and though they appear none too safe, and are certainly small and dirty, yet they are generally crowded to their utmost capacity.

The opening of the Bassein-Henzada railway line in the year 1903 has effected an almost revolutionary improvement in means of communication For the greater part of its length the line taps country remote from both the Ngawun and Daga, and the facilities now afforded both for passengers and freight have attracted new settlers and led to a considerable increase of cultivation, especially in the eastern portion of the Thabaung township.

As will be seen from map No 2, the system of the roads in the north of the settlement area is a good one, and if the roads themselves were of a suitable type, all real need of the country would be satisfied. In this district two types of road seem to be required; firstly, the type which has to carry heavy and continuous traffic throughout the year ; secondly, that which is mainly used in the dry season for carting paddy. In the case of the first type the only satisfactory solution seems to be to provide a first class metalled road with a heavy coat of The Kyonpyaw-Ngathainggyaung and the Begayetthe best stone available Kangyidaung roads are the most conspicuous instances of this type, and the present condition of both can only be described as highly unsatisfactory. Criticism is easy, and it is only fair to mention the following difficulties, namely the enormous price of stone metal amounting to close on Rs. 40 per 100 cubic feet delivered at Kyonpyaw, the impossibility of getting railway transport for the stone or labour for carting it when required, and up till 1914 the absence of a steam roller for consolidation purposes. In view of the heavy traffic and great importance of both these roads. I think the expense should be faced and they should be soled and heavily metalled throughout. As regards the second type of road on which traffic is restricted to the dry weather, experience has shown that the embanked unmetalled roads at present in use are unsuitable. They are sloughs of despond in the rains, and carts do not require embankments in the open season. For this traffic all that seems to be required is a space sufficiently wide to permit of two carts passing each other, the bridging of all streams and a narrow raised embankment, possibly anded or gravelled, for the use of foot passengers. Bridge approaches would also be required for carts and bad ruts might be filled in annually. Expenses of construction and maintenance would certainly be less than at present, and probably the road would be more satisfactory from the point of view of the traffic.

As all the money likely to be available during the currency of the new settlement will be required for the proper maintenance of existing roads, it will serve no useful purpose to recommend costly original work. If money should be forthcoming the construction of a road from Kyaunggon to the nearest railway station at Yodayadut and the extension of the Zaya hla-Thabyehla road to join the main road to Henzada would both of them open up large stretches of country. The repair of existing roads should, however, have priority. Some of them like the Thaunggyi-Matsekku road, parts of which are four feet under water in the rains, are in very bad condition

An attempt by a local *pongyi* to provide a much needed raised foot path from Kwingyi railway station to the Yegyi-Athok road 1½ miles away deserves encouragement. He has completed about half but has been forced to stop by the refusal of a single map to give a way through his holding notwithstanding repeated offers of liberal compensation. The path is a most useful one and I think a small strip of the obstructor's land might be compulsorily acquired.

The ferry arrangements at Kyonpyaw also stand in need of improvement. At present the crossing is effected on a leaky dug-out, which is not only uncomfortable but dangerous. In 1913 the boat was upset by the wash of a passing launch and two passengers were drowned. It might be possible to insert conditions in the ferry license requiring the substitution of a flat-bottomed sampan which should be kept clean and dry. An alternative, namely the construction of a bridge at Kyonpyaw, has been discussed, but it was decided that the traffic did not justify the expense. On the other hand, Kyonpyaw is growing in size, the ferry is an awkward break in the Henzada-Ngathainggyaung main road and traffic generally increases after, and not before, facilities have been provided. I am therefore inclined to think the project merits further consideration.

As regards communications by water the weed known as 'bedabu' constitutes a serious hindrance to navigation on the Daga. It is a species of water hyacinth with a mauve bloom and somewhat thick fleshy bulbs and leaves. It is known in the United States of America and is also said to be one of the principal constituents of the Nile sudd. It has only become a serious nuisance during the

past two years, but in this time it has entirely driven out the indigenous weed known as hmaw, which was a much smaller plant resembling a young lettuce in appearance. The origin of the bedabu is uncertain, but it has spread with alarming rapidity, and during 1913 and 1914 some stretches of the Daga were completely choked for several miles. The result has been to interfere seriously with paddy gigs and sailing boats, the delay in some cases amounting to a month or more. Between November 1913 and April 1914 energetic attempts were made to deal with the weeds by means of bamboo booms, the plants collected being hauled up on the bank. Though a distinct improvement was noticeable during February and March 1914 as compared with the previous year, by May the condition of the Daga was as bad as ever. Nothing definite seems to be known regarding the life history of the plant or the conditions favourable to its growth, though it seems to favour semi-stagnant water and does not flourish in the strong current of the Ngawun. In the circumstances, detailed investigation by a professed botanist seems a necessary preliminary to dealing effectively and scientifically with the plant. It might then be possible to adopt less empirical measures with more chance of success.

The navigation of the Daga is also impeded by a shoal near Yekalok village at the mouth of the Minmanaing creek and by another a little above Kyaunggon town. Both shoals are old ones but are gradually becoming worse and have forced the Irrawaddy Flotilla Company to substitute paddle steamers for screw-driven launches, and the former Agent told me he was considering the introduction of stern wheel steamers. Dredging is expensive and the purchase of a dredger for these two shoals would not be justified, but possibly enough work could be found in the Irrawaddy Division to keep a small vessel continuously employed, and if the expense were shared amongst five districts, it would not be overwhelming. It is also possible that the port of Bassein might find such a vessel useful in deepening the channel across the Panmawaddy flats below Bassein town As regards the unsilting of smaller creeks it is difficult to make any recommendation. The expense and trouble would be certainly great and probably futile, as the work would be a continuous struggle against natural tendencies. Exceptions might possibly be made in the case of the Zechaung creek which is the most used in the district, and also in the case of the Tabu chaung. The latter is a most useful drainage channel with a wide catchment area and by the silting up of its mouth, cultivation has been retarded and fisheries higher up stream have deteriorated.

Kind of fishery.	19 08-09.	1909-10.	1910-11	1911-12.	1912-13.
T	2	3	4	5	6
	Rs.	Rs.	Rs.	Ra.	Rs
Leased fishery	2,58,820	2,71,490	2,97,864	2,71,547	2,50,197
Kadons	6,210	7,180	7,614	5,055	2.560
Net licenses	6,8 89	7,579	9,909	6,877	6,234

10. The following table shows the very large revenue derived from fisheries Fisheries. within the settlement area —

The prices which leased fisheries fetch at the annual auction are largely dependent on the character of the preceding season and the revenue is therefore liable to considerable fluctuations. The last two seasons happen to have been bad ones and the revenue has dropped despite increased demand from other districts and a large rise in the price of both fish and *ngapi*. In this connection the statement below comparing average wholesale prices per 100 viss in the year 1902-03 with those of the year 1913-14 may be of interest. The prices given are

CHAPTER IL-THE PROPLE.

N.	hand find	Ngapı, best	Dried fish.		
Year.	Fresh nsh.	quality.	ist quality.	2nd quality	
	3	3	4	5	
	Rs.	Rs	Rs.	Rs.	
1902-1903	1 13	20	120	70	
1913-1915	35	35	160	125	

those at the fisheries and I am indebted to the Inkunwun of the Bassein district for the information :---

Lessees however complain of a gradual deterioration in fisheries owing to the silting up of waterways and the choking of channels by the bedabu weed. The Inkunwun considers these complaints well founded and thinks that the Ngawun embankment is also partially responsible. I am inclined to think that the deterioration is a necessary consequence of a slow rise in the level of the ground all over the centre of the district. From the fishery point of view the Thabaung township is the most important as it contains 138 out of 284 leased fisheries and 25 out of the 30 so-called kadon fisheries. The Inyè lake lying in the Kyonpyaw township is, however, the most valuable fishery and fetches an annual rental of between Rs. 30,000 and Rs 35,000 There the main catch takes place in July and is effected by gradually penning the fish into a confined space by means of moveable screens. Inve fish are much esteemed and are superior in flavour to fish caught elsewhere in the district. The demand is keen and the bulk of the catch is sold locally at Rs. 2 to Rs. 2-8 per viss for best quality *ngathang* (a species of carp) A small portion of the catch is sometimes rafted alive down the Daga to Bassein where it fetches even higher prices. The present lessee is somewhat anxious about the future of the fishery owing to the gradual silting up of a narrow channel about half a mile long and not more than 20 feet broad connecting the lake with the Daga river. All fish enter the lake by this channel and as the lessee says, it is the windpipe of the fishery. I think steps should be taken to unsilt the channel if the lessee's statements are true.

II. Besides the subdivisional and township headquarters at Kyonpyaw, Towns and Villages. Ngathanggyaung and Kyaunggon the chief villages in the Ngathainggyaung subdivision are Ataung, Yegyi, Mobya, Athok, Inyè and Matsekku. All these except the last are on one of the two main rivers or on the tailway line and are large and wealthy Burman villages. Karens for the most part prefer to live by themselves in smaller villages away from the main lines of communication In the Bassein subdivision large villages are less numerous and less wealthy, the chief being Kangyidaung, Kyaukchaunggyi, Kyeinchaung and Thabaung.

CHAPTER II.—THE PEOPLE

Population.

12. The population at each of the last three censuses is given below :--

Year. «	Burmese.	Karens	Indians.	Others	Tetal.	Agricul- tural.	Non agricul- tural,
I	2	3	4	5	6	7	8
1891 1901 1911	180,239 219,348 245,503	65,933 67,109 69,0 9 9	2,132 7,252 5,499	2,684 1,435 6,137	250,388 295,144 320,238	200,312 221,358 248,301	50,700 73.780 77.937

10

The density per square mile of the total area is 221, and per square mile of the occupied area 403. The occupied area per head is 1'59 acres. The population has increased by 30 per cent. since 1891, but the rate of increase has slackened considerably during the last decade The Kyonpyaw and Ngathainggyaung townships are the most densely populated with averages of 283 and 230 persons per square mile of the total area and show also the largest increases, while the Thabaung township, in which there are only 30 persons per square mile, has remained almost stationary since 1901. The last mentioned township includes a very large area of absolutely uninhabited country along the Arakan Yomas outside the settlement area, but even allowing for this, the population is very sparse. Ngathainggyaung municipality and the notified area of Kyonpyaw contain 7,182 and 5,429 persons respectively, but the majority of their inhabitants are more or less directly interested in agriculture and neither can properly be classed as a town. Ngathanggvaung returns exactly the same population in 1901 and 1911, but Kyonpyaw is growing and will probably expand more rapidly in the future, now that the headquarters of the subdivision have been transferred thither. There are in all 51 villages with over 1,000 inhabitants including four, namely Yegyi, Kyaunggon, Kangyidaung and Ataung with over 2,000 However, 22 of these villages are in the Kyonpyaw township, and in the more rural parts of the settlement area away from the main lines of communication large villages are There is a distinct tendency to live in small villages of 10 houses or even rare. less, these hamlets being frequently named after a present or past inhabitant.

Burmans form three-quarters of the population. The great majority are Lower Burmans but between 15 and 20 years ago there was a considerable influx of permanent settlers from Upper Burma, mainly from the Shwebo, Meiktila, Myingyan and Lower Chindwin districts. They established themselves principally on a sandy upland strip of country which runs through the centre of the Kyonpyaw township, but isolated villages composed exclusively of Upper Burmans are found also in the Kyaunggon and Bassein townships They are still somewhat clannish, and many of them maintain their connection with their native place by occasional visits However, owing to the unattractive character of the waste now available, this immigration from Upper Burma has almost ceased of recent years.

Sgaw-karens and Pwo-karens together make up approximately one-fifth of the whole population. A large proportion of the former are Christians while the latter are either Buddhists or Animists. Karens do not amalgamate well with Burmans and prefer to live in separate villages They would appear to have been pushed somewhat into the back ground in the Kyonkazin and Mobya circles, but a Karen village is a corporate entity, and not a mere collection of individual houses as the ordinary village of Lower Burmans is apt to be

Indians are manily engaged in petty trade, paddy broking or money-lending and also form the crew of the majority of paddy gigs. Except for the isolated and old established village of Ashechaung in the Mobya circle, they rarely work land as owners or tenants. They are, however, employed temporarily in considerable numbers during the reaping season, and if a Burman or Karen cultivator wishes to improve his holding, and the improvement involves any heavy earth-work, ne invariably hires Indian labour. Indians would appear to have decreased in number since the census of 1901, but the figures of that year were abnormally swollen owing to the construction of the Bassein-Henzada railway. The heading "Others" includes Arakanese, Shans and Chinamen. Arakanese are found along the west coast and Shans near Bassein town and in the Kyonkazin and Thaung circles where they are engaged in garden cultivation Chinamen are only found in the larger and more prosperous villages and their presence is an infallible sign of the substantial wealth of the locality. They are middlemen, traders and carpenters and the bulk of the liquor trade seems to be in their hands.

13. There is at present no very marked flow of immigrants or emigrants in Immigration and emigration. The settlement area. Besides the immigrants from Upper Burma mentioned above, the Henzada Kyaukpyu and Sandoway districts have recently contributed a number of new settlers. The immigrants from Henzada are generally men who have lost their former holdings through debt and are now found working as tenants or agricultural labourers in the north of the Bassein district. The immigrants from Sandoway and Kyaukpyu are Arakanese who have settled on the west coast. Emigrants mainly go to the Myaungmya, Ma-ubin and Pyapôn districts. Temporary immigrants, that is to say, those who return annually to their homes, are chiefly Indian coolies whose main object is to work in the Bassein rice mills and who fill in the time by reaping during the slack season. Upper Burmans formerly came down to reap in large numbers, but they no longer do so, and cultivators say they now go to the Pyapon and Pegu districts. A fair number of traders still come down every year by boat from Upper Burma to sell sessamum oil, chillies and similar produce, but return before the rains. This traffic has, however, decreased of recent years owing to the silting up of the Thambyadaing channel connecting the Ngawun with the main Irrawaddy river near Henzada.

14. The agricultural population in which agricultural labourers are included Occupations. eries employ a certain number in the Thabaung township, but other industries are cither, like timber working, supplementary to agriculture or, like potteries and cheroot making, confined to particular small areas The absence of village industries is marked, and it is perhaps regrettable that domestic weaving should have almost disappeared.

15. In the Thabaung township about one-quarter of the population is directly Fishermen and Ngapi making. work their fisheries by the month or by the season of from four to six months at rates varying bewteen Rs. 12 and Rs 15 per mensem together with food. The sixty men employed in the Inyè fishery are paid somewhat differently. For the six months season they get Rs. 25 in cash and also receive permission to net fish for two months before the screens are in position, the average daily value of the catch being Rs. 2 per man Generally speaking fishery and agricultural coolies receive about the same pay and have a similar standard of comfort. The former are regarded with dislavour socially and do not intermarry with other classes of the population They are frequently known as In Talaings and are possibly of Talaing descent though they no longer speak the language.

The manufacture of ngapi, dried fish, and, to a less extent, of pickled fish (nga-chin) is also a considerable industry in the Thabaung township There are numerous varieties of ngapi, but the two main kinds are the so-called nga-nok or thon-u-sat of the ordinary cultivator and the kaung-gyi-daung of the better classes. The fish chiefly used in he manufacture of the former are nga-yan, nga-kon-ma and nga-phyin-sa-let, and in the case of the latter, larger fish such as nga-myin, nga-bat and nga-hpa-ma. In 1914 the price of thon-u-sat varied between Rs 40 and Rs. 50 and of kaung-gyi-daung between Rs. 70 and Rs. 75 per 100 viss. The process of manufacture is somewhat as follows · A basket of fish weighing approximately 10 viss and costing Rs. 3 or Rs. 3-8-0 is bought from a lessee. The fish are then cleaned by girls who get no payment, but who are given the heads which they boil for oil. A basket of fish yields them 40 to 50 ticals weight of oil worth 8 to 10 annas per viss Salt is then added in the proportion of four baskets of salt to ten of fish and after exposure to the sun, the mixture is pounded up The salt used is obtained from the salt fields in the Ngaputaw township and costs Rs. 11 per 100 viss. Owing to the low price of salt compared with the high price of fish the proportion of salt often exceeds the recognized standard. A household manufactures 800 to 1,000 viss per annum. The two main varieties of dried fish are nga-yan-chauk and nga-ku nga-gyi.

Nga-yan-chauk is dried in the sun and costs Rs. 130 to Rs 150 per 100 viss, while nga-ku nga-gyi is generally roasted over a slow fire by night and costs Rs. 150 to Rs. 175 per 100 viss. In the case of the former 20 viss of salt is added to 1 viss of fresh fish, and after cleaning and exposure to the sun for four or five days 100 viss of fresh fish only weigh 35 viss. In the case of nga-ku nga-gyi the loss is even greater, as less salt is added and 100 viss fresh only weigh 35 to 30 viss dry.

16. The pottery industry at Sin-O-bo village in the suburbs of Bassein town Potteries. is of some importance. Glazed earthen jars up to

9 gallons capacity commonly known as Pegu jars, basins of different sizes, flower vases, chilly-pounding mortars and miniature pots and pans for pagoda offerings are the principal articles made There are some 16 kilns, each of which has ordinarily three firings during the eight months of the The clay is obtained in the neighbourhood of the town and is sold in six scason inch cubes. Eighty cubes go to a maing which costs Rs 2 and 12 maings are required for each firing. After the clay has been mixed with water and thoroughly kneaded, it is modelled into the required shape on a rapidly revolving platform. The modelling is done with a sharp shell known as yauk-thwa. A thin coating of glaze is then applied and the pot is left to dry in the sun before firing. This glaze or chaw is derived from slag obtained from the Bawdwin lead mines in the There are two qualities costing Rs. 12 to Rs. 15 and Northern Shan States Rs. 5 to Rs. 6 per basket respectively. The whole contents of a kiln are generally sold for a lump sum of about Rs. 300 If, however, there are many breakages the unbroken articles are sold at fixed rates per 100 Two thousand and three hundred pieces are fired at a time, all the different articles mentioned above being represented in varying proportion Many buyers come from the Akyab and Kyaukpyu districts and there is also a fairly active local demand for the large jars which are used for storing ngapi and sessamum oil. If hired labour is exclusively employed, the cost of manufacture comes to Rs. 250 per firing, the chief items being fuel Rs. 68, pay of men who model and turn the platform Ks. 75, and glaze Rs. 40 In practice about a third of the work is cone by the family of the kiln owner and the net profit is roughly Rs 80 to Rs. 100 for firing or Rs. 240 to Rs. 300 per annum. The fee payable for extraction of the clay is Rs 10 per workman per annum, as Sin-O-bo falls within the limits of Bassein municipality

A flourishing pottery industry of a different type is found in the three large villages of Kwinhlya, Yegyaw and Sadaw on the Ngawun 10 miles below Ngathainggyaung. This pottery is unglazed, hired labour is seldom employed and the articles manufactured are ordinary water chatties, rice pots and curry This Kwinhlya pottery commands a ready sale throughout the Irrawaddy pots. delta and has to a certain extent displaced Twante pottery which is said to have deteriorated. The clay is obtained locally, 25 per cent. cf sand being added before it is moulded on the ordinary platform. About 8 per cent. of the pots fired are failures, and a further 8 per cent are inferior and are sold at a reduced price The ordinary wholesale prices are as follows : water-pots Rs. 7 per 100, rice-pots Rs. 25 per 1,000, small zale pots Rs. 15 per 1,000. The 27 households examined admitted gross annual receipts averaging Rs. 214 from pottery and a further Rs. 54 from bazaar-se'ling and petty trade in the rains Manufacturing expenses per household come to Rs 27, of which Rs. 15 are on account of firewood. Many households have their own boats which they use for transporting clay and for trading, and generally speaking the condition of the average potter is satisfactory and much superior to that of the agricultural labourer. As in the case of Sin-O-bo acre rents are not levied and the royalty on the clay extracted is Rs. 5 per workman per annum.

17. At Buya-U-Bauk and neighbouring villages about eight miles below Minor Industries Minor Industries Minor Industries Minor Industries

grinding mills worked by hand. It was first introduced about six years ago by an immigrant from the Shwebo district and has now taken firm root Both men and women are employed, the latter weaving the outer bamboo covering of the mill. The heavy weights between which the paddy is ground are composed of a

mixture of five parts dried pounded mud, four parts lime and one part salt. When this is exposed to the sun, it sets like iron. The grinding surfaces of the stones are corrugated by means of bamboo strips set vertically in the mud while it is still moist. The manufacturing season lasts four months, during which a man and his wife can turn out 40 mills selling at Rs. 3 each retail or Rs. 2-12-0 each if six or more are bought. Expenses of manufacture come to Rs. 1-8-0 each There is a keen demand for these mills in the Bassein and Myaungmya districts and the industry is a considerable help to the agriculturists engaged in it. Mat-weaving is carried on to a small extent at Tandawgyi village in the Kyaukchaunggyi circle of the Bassein township where fine mats of thin reed are woven. The reeds are obtained from the Ngaputaw township and the mats sell at Ks. 1-8-0 giving a profit of 12 annas a mat. Near Kyeinchaung on the Daga a settlement of 25 houses from Alon in the Lower Chindwin district devotes its whole time to the manufacture of coarse bamboo mats and does not engage in agriculture at all. Along the foot hills of the Yomas and on the west coast many agriculturists work timber and cut bamboo as a by-industry earning from Rs. 12 to Rs. 15 per mensem. In this connection the opening of a saw-mill by the Sgaw-Karen branch of the American Baptist Mission at Ngayokkaung on the west const may be mentioned. The timber is roughly converted there and is then brought round to Bassein by boat. At Ngathainggyaung the rolling of cheroots from tobacco grown in the neighbouring Daunggyi circle employs a few households, but the bulk of the crop is exported in leaf. The manufacture of thatch from thet-ke is of importance in part of the Kyonpyaw township and is dealt with later in this report. In this district, where nearly the whole of the paddy crop is bought on the threshing floor, the carting industry affords an appreciable addition to the income of many agriculturists, and along the main routes the supply of carts is barely equal to the demand.

18. It is only possible to draw very rough conclusions from the statistics Cost of living. Statement 13 Cost of living. Statement 13 Statement 13 Cultivators do not keep accounts, they buy at random when the fit seizes them and have only the vaguest ideas of their annual

expenditure even on articles one might reasonably expect them to know about, such as coats and waist cloths, and when asked about tobacco and vegetables, their minds are generally an exasperating blank. In these circumstances it is hardly surprising that inspectors tend to record stereotyped amounts and that subsequent cross examination has little utility.

The cost of living by race and status over the whole settlement area is shown in the summary at the end of Statement 13.

It will be seen that Karens spend slightly less than Burmans, and tenants than small owners, but the differences are not large and the statistics do not suggest that the economic condition of terants is really serious. The standard of comfort amongst Karens seems to vary much more than amongst Burmans. Some purely rural Karen villages like Sat *kwins* near Begayet are conspicuous for well built and comfortably furnished houses standing in large gardens and for an air of general prosperity unapproached by any Burman village in the neighbourhood. On the other hand, many Karen villages are equally conspicuous for squalor and dirt and fall far below the average Burman village. On the whole, Karens seem inclined to spend more money on food and solid comfort and less on dress and show than Burmans.

At present settlement the average cost of living is Rs. 10.12 per acre and Rs. 243 per family as compared with Rs. 7.95 per acre and Rs 177 per family at previous settlement. Though the general cost of living would thus appear to have increased by something like 30 per cent., it would be wrong to infer that the standard of comfort has increased in the same ratio. By far the greater part of the increase is due to a general rise in the level of prices, and that this rise is not confined to paddy may be seen from Statement 14A, in which the prices prevailing in 1905 and 1913 of some of the principal commodities sold in the Bassein bazaar are compared. As bazaar prices in Kangyidaung, Kyaunggon and Kyonpyaw do not materially differ from those in Bassein, and as local village

shops are still more expensive, the Bassein prices may be regarded as fairly typical of the whole area for third settlement. It may also be remarked that commodities such as fuel and house-building materials formerly obtainable free or at insignificant cost are steadily rising in price. Though the standard of comfort has thus probably not risen to the same extent as the cost of living yet there can be no doubt that there has been a substantial increase. It may be doubted whether the very high prices ruling in 1908 and 1912, were an unmixed blessing, as they encouraged extravagance and raised false hopes, but the general trend of prices has been upward and in the Ngathainggyaung subdivision the majority of owners and many tenants exhibit all the outward signs of substantial comfort. Well built wooden houses with corrugated iron roofs are yearly increasing in number, village streets are frequently provided with raised brick paths, European furniture such as clocks, beds, tables and chairs are not uncommon, all the larger villages boast one or two Indian or Chinese shops and there seems no difficulty in finding Rs. 2,000 or Rs. 3,000 for the building or repair of a pongyi kyaung. Silk longyis and brown boots are not uncommon possessions of the younger generation, many of whom have been educated in Bassein, and some even in Rangoon, occasionally with results unlooked for by their parents. On the other hand in the Bassein subdivision except in the neighbourhood of Kangyidaung the standard of living, as Mr. MacKenna remarked, is distinctly lower. He says : "The villages are poor and squalid, the houses are dirty and uncared for and the whole prospect is rather dejecting." Kyaukchaunggyi is perhaps the only village of which these remarks are no longer true, and the general impression given is that cultivators in this area are less comfortable and spend less on In the Bassein township the lower standard of comfort is probably due luxuries to the soil being less fertile, and possibly also to heavier losses from cattle disease and in the Thabaung township, to flooding and to the fact that in the east of that township a large number of cultivators are new settlers from the Henzada district. Nevertheless even in the Bassein subdivision the standard of living cannot be considered low and cultivators are not stinted for necessaries. They feed well, their ngapi is by no means of poor quality and most of them can afford two or three trips a year to Bassein Though cheap imported cotton longy is are in the large majority every body has a silk longyi for festivals, and it is significant that hair-dressers are found in the larger villages making a very tolerable living with a charge of four annas a head.

10. The result of some enquiries into the average income and expenditure of **Cost of living.** Agricultural agricultural labourers is also shown towards the end of Statement 13. The wages of this class are usually payable at the end of the harvest in paddy, which for statistical purposes has been commuted at the local price assumed for the particular tract in which each labourer was examined. Though this local price is somewhat low, this is counterbalanced by the fact that most labourers do not wait till the end of the harvest when their pay is due, but take substantial advances in cash at an average commutation rate of Rs. 80 per 100 baskets. It must also be remembered that high paddy prices hardly benefit this class at all, as very few households have any surplus in excess of their domestic requirements. Miscellaneous earnings of the labourer's family such as the profits of bazaar selling have been included in his income. Though absolute accuracy cannot be claimed for the statistics, they are possibly an approximation to the truth and seem to warrant the conclusion that the standard of living of the labourer class is far below that of the small owner and tenant classes. The average annual expenditure of the labourer is only Rs. 144 per family as against Rs. 243 of the other classes, and marked differences in dress and housing apparent to the most casual observer support these figures. There is very little debt but this is due to the invariable absence of any tangible security, and there can be no doubt that the average labourer has a struggle to make both ends meet. He seldom succeeds in acquiring sufficient capital to become an acceptable tenant and his opportunities of bettering his condition are few. On the other hand, he enjoys certain compensations, his work is not arduous except for limited short

periods, he has abundant leisure, and it is only in very exceptional cases that his pay need cause him any anxiety.

20. The statistics given in Statement 15 present much too favourable a picture of the normal state of indebtedness in the settlement past and Indebtedness at In the first place they were collected after the area previous settlements harvest when the majority of debts had been paid off either wholly or in part, secondly in the year 1912-13 there was an abnormally good harvest, and thirdly there were grounds for suspecting some concealment of debt, more especially if it involved the mortgage of land. Mr. H. Clayton during the year 1909 dealt exhaustively with the question of indebtedness in the Irrawaddy Division as a whole and found that 58 26 per cent. of small owners and tenants examined in the Henzada Island tract were indebted. This is probably nearer the truth than the present settlement figure of 36'24 percent. The statistics are nevertheless useful for purposes of comparison with Mr. MacKenna's collected under similar conditions.

-	Number of cultivators	Number 1 debted.	Percentage indchted.	Incidence of debt per	Percentage of cases in which rate of interest was		
	examined			person.	under 36 %	over 36 %	
1	2	3	4	5	6	7	
and Settlement	5.573	2,468	44 23	135 89	38.00	62'00	
3rd Settlement	10,394	3,783	36 24	308 31	94*76	5'24	

Allowing for the effects of the good harvest of 1912-13, when statistics were collected in the Bassein subdivision, that is to say, the area in which indebtedness was most widespread at second settlement, the proportion of cultivators indebted to those examined seems to be much the same at the two settlements. The two salient points of difference are a greatly increased incidence of debt and a heavy drop in the rate of interest Prices and the standard of comfort have risen and more money is available for loans at a lower rate of interest, but the average sum owed by the individual debtor has more than doubled since last settlement. When considered with the fall in the rate of interest and the small proportion of debtors hopclessly involved, the greatly increased incidence is not altogether unfavourable as it indicates an expansion of agricultural credit. While there is perhaps at present no great cause for anxiety, it is regrettable that cultivators have not availed themselves of the opportunity afforded by high produce prices to reduce their debts instead of merely increasing their expenditure. The fall in the rate of interest is entirely satisfactory, and as compared with previous settlement borrowers now get their loans on terms lower by from 12 to 15 per cent. per annum. It is noticeable that in those cases in which the rate of interest still exceeds 48 per cent. a disproportionately large number are found in the foothills of the Yomas and the flooded precarious area of the Thabaung township (primary tracts 3, 5 and 8), where the standard of living is lowest, money scarcest and borrowing least frequent. Taking the settlement area as a whole, I entirely agree with the following remarks " On the whole, it of Mr. Clayton to whose lucid report I am much indebted : cannot be said that the data collected in the course of my enquiry give cause for any great despondency as to the future of the agricultural population in this tract

so far as this tract is concerned the general impression made upon me by its inhabitants is that of an efficient and industrious population, and I see no reason to believe they would compare unfavourably with the agricultural classes of any other country." The following table gives some additional particulars of indebtedness by assessment tracts Where a man's debt exceeds the whole annual value of the produce of his holding it has been assumed that he is hopelessly involved.

Assessment		Cultivators	Culturators	Presentado	Number	Average in del	ncidence of
trac	tract.		indebted.	indebted.	hopelessly involved.	per person indebted.	per acre, of debtor's holdings.
1		2	3	4	5	6	7
rA		378	156	41'27	30	446*31	15.80
2 A		808	306	37.87	18	271 89	7.46
3A		114	32	28.07	1	197.96	5'53
313	•	195	78	40 00	6	155.66	6.37
3C		200	75	25 86	17	166.13	11.85
4B		219	122	55 70	17	304.01	10.21
5B	••	870	196	£2°52	36	39878	13.98
5(197	13	21.82	3	189*41	8.07
6 A		275	107	38 90	15	354-29	11.89
6B		645	170	26 35	50	469.61	20 56
7B		343	168	48 97	9	260.20	9.76
8D		135	10	7.40		113.20	1.63
913	••	483	132	27 32	23	384.82	19.72
οC	ă.	0 10	339	36 06	66	504.63	21.75
toB		519	211	40.62	22	210.10	14.67
10C		374	148	39'57	15	292'62	15.02
11B	•••	3,046	1,216	39.92	97	259.59	13.90
1 1C	••	533	1 121	36.33	8	293.09	15 33
12B	•••	365	163	44.62	10	3 30.1 3	12.63
Total		10,529	3,793	36.54	443	308.31	13'48

At previous settlement approximately 3 per cent. of those examined were hopelessly involved as compared with 4'20 per cent, now

Thirty-six per cent of small owners admitted indebtedness as compared with 37 per cent of tenants. Owing to the better security that the former can furnish their incidence of debt is much higher than is the case with tenants. Amongst small owners the incidence was Rs. 403 per man and Rs. 1673 per acre as against Rs. 189 per man and Rs 887 per acre amongst tenants.

Utilisation of loans.

21. It is to be feared that little reliance can be placed on the table below showing the objects for which cultivators allege their debts were incurred :--

				Per cent.
	(Purchase of land	1		7:38
	Improvement of	land		0'42
Productive expenditure	Purchase of catt	••	29.26	
1.2	Expense of cultiv		43'50	
	Household expended	nses		14'18
42.0	Sickness			0'16
Unproductive expendi-	Litigation		••	1.03
ture.	Festivals			2'48
	Miscellaneous			1.00

CHAPTER II-THE PROPLE.

Absolute candour is hardly to be expected, and in a fair proportion of cases it is probable that the necessity for borrowing arose from previous extravagance, though the loan may have been productively employed.

Again there can be no doubt that gambling is a prolific source of debt in the present settlement area, but in not a single case was this reason given. The gambling that came under my personal observation was quite open and unabashed, the accompanying pwe was a mere blind and in several instances the moving spirits were not local villagers but men from Bassein who go on regular circuit when cultivators are flush with money after selling their crops. The clearing of new land with insufficient capital has been re-ponsible for much hopeless indebted-Detailed enquiries were made in three very large kwins the ness in the past greater part of which had been cleared during the past 20 years. In hardly a single instance was the man who cleared the land the man now in possession, and it seems fairly clear that unless a pioneer has a considerable amount of capital he has little chance of enjoying the fruit of his labour. . Possibly Rs. 700 in cattle, paddy and money is not an excessive estimate of the minimum required to clear a 15-acre holding if a pioneer is not to be crippled by debt before his holding reaches the producing stage.

22. Amongst both owners and tenants loans are almost invariably repaid in cash, but among st agricultural labourers repayments in Repayment in kind paddy are almost the rule The wages of the last mentioned class are payable in paddy at the harvest and in order to tide them over the interval they borrow small sums from their employers, the loans being adjusted when their wages are paid. The interest charged is very high, but in 1912 and 1913 owing to the high range of paddy prices there was distinct, if as yet only temporary, improvement in this respect Up till 1911 Rs 60 was advanced in July and August and Rs. 70 in September and October in return for a promise to pay 100 baskets of paddy in the following February. In 1912 the rate rose to Rs. 90 and Rs 100 respectively, but receded slightly in 1913 to Rs 80 and Rs. 90 and in 1914 there was a further drop to Rs. 70 and Rs. 80. As paddy fetched from Rs. 125 to Rs 140 at the tim of payment, and as labourers are not permitted to borrow beyond the amount of wages due them, the interest is enormous However, the system is convenient, the loans are generally for small amounts, and as agricultural labourers have no security to offer, they cannot borrow from outside money-lenders.

23. Over the greater part of the area cultivators are financed either directly or indirectly by chetties, who have a very just appre-Classes of money-lenders ciation of the value of land In the Bassein subdivision they are rarely found directly interested in the land other as mortgagees or as direct lenders to cultivators, but in the more fertile Ngathainggyaung subdivision they readily accept land as security for loans, though they generally confine themselves to large transactions of over Rs. 1,000. The small loan business is left to local traders and money-lenders who borrow much of their capital from chetties at 21 to 24 per cent per annum. This is in turn advanced to cultivators at 30 to 36 per-cent. per annum leaving a substantial profit. Though the chetty charges a lower rate of interest, he requires a mortgage of the land or other substantial security, he never lends to tenants and insists on punctual payment. The Burman charges a higher rate of interest, but he conducts a more risky business, he is more ready to allow extensions of time and is prepared to accept personal security. The chetty and the Burman differ also in their attitude towards the acquisition of land. The former does not wish to become a landlord, and if land comes into his possession he gets rid of it at a fair price at the earliest possible opportunity. The Burman money-lender is more disposed to regard land as a permanent investment and in the more fertile areas is apt to retain it to be worked by tenants.

24. There are at present 14 Co-operative Credit Societies in the settlement Co-operative Credit area, one, namely the Kozu Society, having recently Societies. been wound up. I am indebted to Maung Myit, Assistant Registrar, for the information contained in the table below :--

(1			Num men	ber of hers	Share	capital	Outside capital		
No	Name of Society.		forma- tion,	at forma- tion.	now (Septem- ber 1914).	at Iorma- tion.	now (Septem- ber 1914).	at forma- tion.	now (Septeni- ber 1914).	which affiliated.
r	2		3	4	5	6	1	8	9	10
					1	R 5.	R5.	Rs.	- Rs.	
I	Myochaung	•	n r	11	32	150	2,910	500	1,900	1
2	Hleseik	•	1909	12	19	510	3,490			i i i
3	Ingala		-10	15	30	700	5,570			L in
4	Inyegyun		Ji	11	15	620	3,220	٠		seik
5	Kanyinz ting) (12	16	800	3,720			He
6	Seikkyi		1910	10	10	100	400	250	400	j
7	Ywathagon		-II]	14	14	760	2,840			٦
8	Kwetpyin	÷	Jt	13	16	t 80	960		1,700	
9	Thingandaung		1907-08	20	33	290	1,730	800	440	
10	Thabyegon	×	1910-11	15	16	210	860	••	600	l a
11	Ywegon		1908-09	14	20	220	1,570	1,000	750	vidu
12	Begayet	••	1910-11	20	27 1	670	5,430			Ipdi
13	Asugyi		1911-12	19	28	700	2,700		500	ļ
14	Singu		1910-11	14	41	330	2,500		5,500	
	Total			200	307	6,240	, 35,90	2,550	11,790	<u>ا</u>

Though there has been a considerable increase during the past five years both in the number of members and the amount of capital subscribed, the co-operative movement cannot be said to have taken firm root. There are various reasons why this should be the case. Villages in the settlement area are apt to be collections of individual houses rather than corporate entities, residents come and go and there is a good deal of mutual mistrust. There are few villages in which the same families have lived for generations and the typical village is a heterogeneous collection of men from all over the delta with perhaps a small admixture of immigrants from Upper Burma. The latter, it may be suspected, are not of the best class and some undoubtedly have had to leave their country for their country's good. These remarks are not applicable to Christian Karen villages which are bound together by ties of religion, language and race, and it is significant that 12 out of the 14 existing societies should be composed of Christian Karens. This preponderance may perhaps also be partially explained by the fact that the late Assistant Registrar was a Christian Karen, but undoubtedly the average Burman village is not very promising material. • Again, it must be remembered that the co-operative movement has not been brought prominently to the notice of local Burmans, and if it were, there is some reason to believe the results would be satisfactory. The Singu Society near Yegyi is entirely Burman and this to an untrained and untechnical enquirer seemed the most progressive and prosperous of them all. It has a good reputation in the neighbourhood and some of the surrounding Burman villages were anxious to follow its example. Another reason given me for the reluctance of cultivators to join

societies is that the latter have insufficient capital to supply the legitimate needs of members. The standard of living and the cost of cultivation are both high and a cultivator working 25 acres may quite reasonably wish to borrow Rs. 300. If he joins a society he has to stand his chance with others and may possibly get Rs. 100. He will be unable to raise the balance locally however good the security offered as the co-operative movement has to contend with the undisguised and strenuous opposition of local money-lenders who refuse to accommodate any member of a society. Further, the current rate of interest on good security is not exorbitant, namely, 24 or at most 30 per cent. per annum, and some intelligent men have told me they prefer to pay this higher rate and get their full requirements rather than pay 15 per cent. on a smaller amount. The Provincial Registrar in his report for 1913 remarks "The complaint, largely justified against rural societies in Lower Burma is that sound cultivators cannot obtain sufficient funds from them. The class in the delta that corresponds in character and honesty to the co-operating established cultivator in Upper Burma who farms 10 or 12 acres is the 50 or 60-acre man, whose average requirements in loans are naturally far above the R.s. 120 average required in Upper Burma If co-operation is to be established in Lower Burnia, it is this class of man that must be considered, and not, at any rate at first, the penniless so-called tenant and debt-swamped owner." It seems clear, therefore, that the co-operative movement in the delta has to face an entirely different problem with much larger capital requirements than in Upper Burma. From my small experience in the settlement area, which is perhaps not typical of the rest of the delta, I would venture to suggest that the 50 or 60-acre limit is somewhat high It would exclude nine-tenths of the agricultural population, and, from what I have seen, a large proportion of men with 50 or 60-acre holdings are non-agriculturists who let the land to tenants and stand in no need of assistance and would merely use the money to finance their speculations in paddy. I am also inclined to think that the financial condition of small owners and tenants is not so irremediably desperate as to disqualify them from joining societies.

CHAPTER III -AGRICULTURE.

25. The area under unirrigated winter rice forms 90 per cent of the occupied area and this crop is the one staple on which the whole agricultural prosperity of the district depends It falls into the two main divisions of *hauk-kyi* and

kauk-lat differing in date of maturing and in size of grain Kauk-kyi requires a deep soil and an abundant water-supply and is chiefly grown on good new land immune from flooding. Though both kauk-kyi and kauk-lat are ordinarily transplanted at the same time in the beginning of July, the former is not reaped till the last ten days in December, perhaps a fortnight or three weeks after kauk-lat. The chief varieties of kauk-kyi met with were a black grain known as nga-kywe da-li-zan, mi-don and byat. It is, however, mainly grown for home consumption and forms a very insignificant proportion, probably not more than 5 per cent, of the total paddy crop of the district. The grain is larger and heavier than the ordinary kauk-lat grain and the supply being limited, it commands a local price higher by Rs. 5 or Rs. 10 per 100 baskets than kauk-lat, but so little is exported that no separate kauk-kyi quotations are made by millers. Export paddy is almost entirely kauk-lat of which there are very many varieties. Lam-bat, let-ywe-sin, yo-ra-ya nga-ya-bo, sa-ba-ni and kaw-ka-nyut are grown mainly but not exclusively on high ground, while nga-sein-gyi, myit-nga-sein, nga-kyauk and mok-seik-kyi are characteristic of low ground. Of these myit-nga-sein, nga-kyauk and let-ywe-sin are heavy grams, and some samples of the first mentioned were found to weigh as much as 52 pounds per 9-gallon basket. On the other hand, sa-ba-ni, yo-da-ya and more especially mok-seik-kyi are light grains. The last rarely exceeds 48 pounds per basket and is a long thin grain with a spike at one end. It is also apt to break in milling, but it has the advantage of maturing quickly and on this account is extensively grown on flooded land after the water has subsided In the Kyonpyaw and Ngathainggyaung townships many holdings contain a field of kauk-hnyin, a glutinous variety of paddy grown exclusively for domestic use.

26. A variety of paddy known as *tadaungbo* has made its appearance *Tadaungbo*. *Ta*

27. In the inundated Thabaung township much of the area is transplanted with mok-seik-ky: paddy in October or even in Gwa-Mayın November and reaped in the beginning of February. This crop is known as gwa-mayin, a concise expression denoting that which comes between the main unirrigated rice crop reaped in December and the irrigated nice crop proper (mayin) reaped in March and April. It is also allied to mayin in that land exceptionally favourably situated near a stream or pool of standing water is sometimes irrigated by means of scoops worked by hand or by an elaborate system of cogwheels worked by bufflaoes or bullocks. The question was considered whether this crop should not be treated as a distinct main kind of cultivation, but the difficulty of fixing the line where ordinary unirrigated rice ended and gwa-mayin began proved insuperable. Local cultivators were as much at fault as the settlement staff and rightly pointed out that the boundary of the two main kinds varied annually with the degree of flooding. As the whole area is liable to flooding of a greater or less intensity, it was decided not to distinguish the two but to constitute the whole area a separate primary tract requiring special treatment.

28. Irrigated rice or mayin is planted in the cold weather and is reaped in April or the beginning of May. The chief centre of Irrigated rice-Mayer . this cultivation is a shallow expanse of water known as the Lahagyi lake lying in the Kwinhla circle of the Thabaung township. Owing to the very shifting nature of the cultivation, this area is not under supplementary survey, and only actually cropped areas are assessed. In the course of the expiring settlement there has been a considerable expansion of the area under mayin which has steadily risen from 775 acres in 1901 to 2,375 acres in 1914. Further large areas are suitable for this crop in the Bodaw Kanni circle, but have not been taken up owing to the objections of fishery lessees. Several petitions asking for permission to bund streams for the purpose of cultivating mayin in this circle were received, but as this would involve the destruction of some fisheries, they were referred to the Deputy Commissioner for orders. Two varieties of paddy are grown, namely, baw-gyan on the higher ground and lon-thwe on the lower. The land is irrigated principally by water wheels costing Rs. 30 each, but some cultivators use long wooden scoops worked by hand. One water wheel can irrigate from four to five acres, and the hire of a pair of bullocks for working it is Rs. 25. The crop is grown for domestic use and not for sale. It is also distinctly unpopular, as it involves a good deal of hard work at the hottest time of the year when other cultivators are at leisure.

29. Other crops are dealt with at greater length later in this report and to avoid repetition only a brief reference is made here.

Other crops, Except for a sandy ridge of high land running through the centre of the Kyonpyaw township, where plantain gardens are of importance, the great majority of gardens are of the house-compound type. Some indifferent pineapple gardens are found in the Shangwin and Shwemyindin circles of the Bassein township and on the west coast there are a few good cocoanut gardens. Dhani is mainly confined to the west coast. There has been a considerable expansion of tobacco cultivation in the flooded plain opposite Ngathainggyaung town and miscellaneous country vegetables are grown in the same area. A variety of yam known as palawpinan is an interesting miscellaneous crop grown in taungyas in the Thabaung township and small plots of inferior sugarcane are found in most circles of the Ngathainggyaung subdivision.

30. Agricultural methods are fairly uniform throughout the settlement area.

Agricultural methods

Minor differences restricted to small areas or to a

particular variety of paddy are mentioned below, but methods are not radically affected by the race of the cultivator or the nature of the soil. The implements normally employed are the ordinary wooden plough with an iron tip (te), the five toothed harrow (tun) and the roller (hlein-don). The last mentioned is of the blade and not the ring type and consists of an iron or wooden frame fitted with horizontal iron blades. It costs Rs. 25 and is purchased in Bassein or Henzada, while the plough and harrow are of village manufacture and cost only from Rs. 3 to Rs. 5 each. The ordinary procedure is first to plough the field, then to harrow it thoroughly, and finally to pass the roller over it once or twice before transplanting seedlings from the nursery. The harrowing is done most systematically according to a definite plan. The harrow is first drawn across the field either from north to south or from east to west. After the whole field has been covered the harrow is then drawn at right angles to the original direction, thus forming a number of small squares. Then the harrow is drawn diagonally across the field from north-east to south-west and from north-west to south-cast, and this is repeated till every square mch of the area is covered. Harrowing in any one of these directions is called a sat, six sats being considered sufficient for low lying fertile land, while in the case of higher land, ten and even twelve sats are common. A few cultivators in the Bassein town plain use their buffaloes to knead the ground, but this is in addition to, and not in the place of, harrowing. In the same area a few patent American "disc cultivators" are found. They are not very popular, as they are extremely heavy and exhausting to plough cattle, though they are efficient enough on high ground In the case of inundated land covered with thick reeds and grass, harrowing is occasionally dispensed with altogether and cultivators merely clear the growth with their das and transplant at once. This primitive procedure is only possible for a limited period in new and fertile land I ransplanting, as opposed to broadcasting, is practically universal throughout the settlement area, the only exception being the limited area under tadaungho. Seedlings as a rule are transplanted one month after being sown in the nursery, but where they have to withstand floods, they are generally six weeks old. In good low-lying land the seedlings are planted one or two at a time at intervals of 9 inches, while on high land they are planted four or five at a time at intervals of 6 inches. Transplanting is done entirely by hand, no stick or other implement being used

In the badly inundated part of the Thabaung township operations are less methodical and are largely influenced by the date on which the flood subsides. The young plants must take root before the water disappears completely, and if ploughing does not start before the end of October, after which date no substantial amount of rain is to be expected, operations are necessarily hurried and superficial. In this flooded area high land suitable for nurseries is scarce, and if replanting is necessary seedlings, if obtainable at all, have to be imported at considerable expense from the higher land lying near the banks of the Ngawun and Daga rivers.

Isolated cultivators occasionally spread chaff and cattle droppings over their holdings but regular manuring is not practised in any part of the settlement area. However, the systematic fallowing that prevails in portions of the Bassein town plain is equivalent to manuring. Even when new the soil of the plain was of no great fertility and at first settlement in 1880 shifting cultivation was general, that is to say land was abandoned after one or two years working and fresh land was taken up. With increased population holdings have now become permanent, and in order to give the land the rest essential to its bearing a crop worth the trouble of reaping, cultivators now fallow the different portions of their holdings in turn. The most common method is to let the land he fallow one year in four, but no definite cycle is universally observed and instances of one year in three and one year in five were met with. The curious preference of Karens for large fields of an acre or more in area is well marked in the Kyonkazin circle

Cultivators select seed in so far as it profits them to do so, that is to say if a man has a holding part of which is high ground and part of which lies low, he will reserve the seed appropriate to each variety of soil and keep the two species apart, and one does not find them mixed in the same plot. On the other hand the roundness and evenness of the grain do not interest him, he is concerned with bulk only, and if he takes the trouble to produce heavy fine grain, the profit goes to the broker. Millers doubtless prefer round, even and bold grain, but till they get into direct relations with the cultivator and translate their preferences into terms of money, they can hardly expect an improvement.

It may be said that agricultural methods are those sanctioned by tradition and that they are efficient as far as they go. The only exception is perhaps to be found in the flooded area of the Thabaung township where the substitution of good substantial *kasins* for the present very sketchy ones might retain the water longer and give the seedlings more chance of surviving. It must be acknowledged, however, that the present methods are wasteful and cannot continue indefinitely without impoverishing the land. That they have not already done so is due to the natural richness of the soil and probably also to more careful husbandry, but sooner or later the problem of an efficient and cheap manure will have to be faced.

3I. Excluding the primitive backward country in the Yoma foothills and also the badly flooded Thabaung township hired Agricultural labour. labour is freely employed in all the wealthier and more fertile portions of the settlement area. Landless men are everywhere common, holdings are comparatively large, and a distinct social class of agricultural labourer is found. As has been pointed out above, both in standard of hving and in popular consideration a man of this class is far below the tenant, he has hard work to make both ends meet and has but small chance of rising in the social scale. These agricultural labourers are nearly all Burmans or Karens residing permanently in the settlement area, and though many Upper Burmans formerly came down temporarily for the cultivating season, they have ceased to do so for the past five years at The supply of labour is adequate to the demand, the rates of pay are reguleast. lated rather by custom than by competitive conditions and do not differ materially from those prevailing at second settlement. Labour paid in kind at a daily rate is the rule, except in certain areas where Indian labour is employed in reaping, in which case con tract rates are in force. The daily wage of an adult male is a basket of paddy together with his food consisting of one meal a day if his house is sufficiently near for him to return at night, and, if it is not, two meals are supplied. This rate is paid irrespective of the nature of the work done and is practically uniform throughout the settlement area Payment is made after the harvest and though the labourer has to wait he is not affected by the high price of rice. Cash is seldom paid, as paddy is generally preferred by both sides, but, if it is, the daily rate varies between 12 annas and one rupee. Labourers are most frequently hired for the whole cultivating season of nine months (*talinpyi-kyiwin*). These men get 80 to 120 baskets according to their age and capacity together with food, and are also expected to do various odd jobs such as cooking, splitting firewood and drawing water. A very common form of hiring is to engage a man for the ploughing season of three months only (tun-don-byit), for which he receives 40 to 50 baskets together with food. In the north, though not in the south, of the settlement

area he is also expected to pluck seedlings from the nursery He only uses one. yoke of cattle and the harrowing is done thoroughly, so he can only manage 10 to 12 acres in the time. Assuming the local price of paddy to be Rs. 95 per 100 baskets and the cost of food to be Rs. 5 per month, the cost per acre is Rs 5 20. More rarely a man is hired for ploughing, plucking and transplanting (*le-pyi-sa-yin-hnga*). This lasts in all about four and half months, for which the rate is 60 baskets together with food. The 1ate of hire for the two months of the reaping and threshing season is 30 or 35 baskets together with food.

As regards plucking seedlings from the nursery ind transplanting, the unit is the *let* or bundle of seedlings containing about 2,400 plants. In return for a basket of paddy and one meal a day a man is expected to pluck 20 bundles or to transplant 15 bundles on high land, and 10 to 12 bundles on low land. As 45 bundles are required per acre on high land and 35 on low land, plucking and transplanting on the former cost Rs. 2'25 and Rs 3 00 per acre 4 spectively, and on the latter Rs. 1'75 and Rs. 3 50 per acre. Plucking is an art requiring skill and long practice and an expert can complete 40 bundles per day. Such men sometimes prefer to work at the piece work rate of five baskets per 100 bundles without food. Daily labour being somewhat expensive, it is in practice only called in to supplement the work of the cultivator himself and that of his more permanent hired hands. The obligations of the latter are brought home to them by the rule generally observed throughout the settlement area that if through illness or any other cause a daily labourer has to be hired to replace a more permanent employé, the latter has to reimburse his master should the cost of his absence exceed 5 baskets

The cost of reaping including the value of food comes to Rs 4.80 per acre. The rate is a basket per day in which time a man can reap one quarter of an acre. In the neighbourhood of Bassein and also along the Ngawun embankment Indian labour is employed in reaping but not in plucking or transplanting. These men are either mill coolies or employès of the Public Works Department and are hired in gangs of eight to twelve men during the slack season after the mills have cloced down They are usually paid in cash and work by contract making their own bargain with the cultivator. A normal contract is Rs 80 per 1000 baskets together with a basket of rice per man on completion of the work. Cultivators say Indians are 20 per cent. cheaper than Burmans but are apt to be careless and to cut the stalks too high up For threshing the usual rate is 20 to 25 baskets for every 1000 obtained, equivalent in the case of good land to a little under one rupee per acre. The usual charge for winnowing is one rupee per 100 baskets, that is to say approximately 4 annas per acre.

32. The following curious customs and beliefs, though perhaps not peculiar to Agricultural customs. the present settlement area, may be mentioned Considerable importance is attached to the shape of their holdings by both Burmans and Karens, and holdings that cheit or hnyat are unpopular as it is thought undeserved misfortune will befall their owners. A holding is said to cheit when it projects into another holding so as to be surrounded by the latter on three sides, and to hnyat when it intervenes between holdings belonging to father and son or other near relatives. In the latter case a narrow strip is frequently left fallow to guard against evil consequences. The village soothsayer is always consulted as to the auspicious days (yet-ya-za) for starting ploughing and the unfavourable ones (pyat-tha-da) are scrupulously avoided On completion of threshing kauk-hnyin plantains aid cocoanuts are offered to the Bon-ba-gyi-nat on temporary shrines crected at the corner of a field, and before

verbal notice to quit. The Karens also have an elaborate system of ashaungs or fines for the doing of unlucky acts. These fines are quite triffing and usually consist of four anoas or an egg or a fowl. Letting an axe fall from another man's house, or driving a cart against a house or heap of paddy or across another man's land are all considered to be unlucky.

burning and clearing new land the owner must give all living creatures seven days

AGRICULTURAL CUSTOMS, INSECT PESTS AND EXPORT-PARAGRAPHS 32-84.

As regards inheritance the custom of the eldest son taking double the share assigned to each of his younger brothers and sisters seems to be dying out and children as a rule share equally. If either the father or mother dies and the survivor remains unmarried, children cannot demand a division of the inheritance till after the death of both parents. Undivided family estates are usually worked by each co-heir in turn for a year at a time. It is said such estates are increasing in number owing to the growing reluctance of co-heirs to let themselves be bought out. They find difficulty in securing other land to work owing to the scarcity of suitable waste.

33. Paddy cultivation in the settlement area suffers from various insect pests, Pests. the chief varieties being the u-shauk-po, the gok-po, the ywet-pyat-po and the daung-de. They cause cultivators a certain amount of loss every year, though they cannot be said to damage paddy in a wholesale manner. The first two kill the plant, while the other two weaken it by eating the young leaves No preventives are in use except that cultivators occasionally open the kazins of fields infested with the ywet-pyat-po and let the water out. This is said to be effectual, but the remedy is almost as bad as the disease as the outturn of the whole plot is reduced. Rats do a certain amount of damage every year in the Thabaung township, and several fields selected for reaping by the settlement staff had to be altered on this account.

Tobacco cultivation suffers from a variety of insect pests which sometimes reduce the outturn of a holding by more than 50 per cent. The principal ones are as follows —

(1) The po-than-gyaung, a light brown thin caterpillar half an inch long with a red head. This kills the young plants by eating the roots.

(2) The *po-daung-de*, a light brown caterpillar about one and a half inches long with darker brown bands. This appears at night and eats the leaves and the stalk of young plants

- (3) The pyan-po, a name applied to two kinds of caterpillar :--
- (a) a small black species about quarter of an inch long which eats the under side of the leaves of mature plants leaving brown marks.
- (b) a somewhat larger white species which eats through the whole leaf leaving nothing except the stalk and the main ribs
- (4) The pa-yzt, which is a cricket feeding on the leaf of the plant.

(5) The gok-kya which is the most feared. This is a mottled brown caterpillar that appears every year during the plucking season. It eats large holes in the leaves and does most damage by night. Cultivators frequently have to spend a considerable part of the night plucking these insects off the leaves by lamp-light in addition to working hard all day. Children also earn a little pocket- money by collecting them and get an anna for every milk tin they fill

(6) The *nyun-bu-po*, which is a smaller green caterpillar that eats the undeveloped leaves but does not kill the plant though it weakens and stunts it.

Reference may also be made to Russell's vipers which have become a serious nuisance during the past five years in the extreme north-east of the district. They are said to have crossed from the Ma-ubin district and are particularly partial to areas under *tadaungbo*. Extreme caution is necessary in reaping, when boots woven from the stalks of toddy plam leaves are commonly worn.

34. The settlement area covers approximately five-sevenths of the Bassein Bxports. largest exportable surplus. I am indebted to Mr. Hudson of Messrs. Bulloch

CHAPTER III.- AGRICULTURE.

	Year.	~1	By rail	By boat	1 otal.
			Tons.	Tons	I ons.
1911	•••		70,634	281,385	352,019
1912			110,526	371,611	482,137
1913			123,600	404,361	525,961
		1			

Brothers for the following particulars of paddy landings at Bassein during the past three years.

As these figures include indeterminate quantities exported from the Myaungmya, Henzada and Ma-ubin districts they do not afford a satisfactory basis for estimating the exportable surplus of the particular area under report Millers roughly estimate this at 200,000 tons This estimate is slightly below the more reliable one framed by the Commissioner of Settlements and Land Records who in 1912 put the exportable surplus for the whole district at 300,000 tons in round figures, thus giving 214,000 tons to the present settlement area

The great bulk of the paddy landed at Bassem is milled into cargo rice and exported to Europe by six large mills under either English or German management. The paddy landed in 1913 in Bassein was estimated to yield 380,000 tons of cargo rice of which export to Europe amounted to 363 500 tons. The balance was either consumed locally of sent to Rangoon. Besides the six large mills mentioned above there are a fair number of small mills not only in Bassein but also in large villages such as Yegyi, Kyaunggon, Kvaukchaunggyi and Kangyidaung. These belong to Burmans and Indians and their chief business is milling rice for domestic consumption. The usual charge is eight to ten baskets of paddy per 100, the amount of rice obtained varying from 45 to 50 baskets per 100 of paddy.

Apart from paddy the only export worth mentioning is plantains which are sent to Rangoon and Henzada in considerable quantities

35 The question of dealing with the Bassein rice export trade by means of elevators was recently raised by the late Mr Noel

Paton, Director-General of Commercial Intelligence, in his pamphlet on Burma Rice He pointed out that Burma throws most of her produce on the market at the moment when supplies from other principal sources are also offered and prices are at their worst Thus 50 per cent of Burma's export is shipped in the first 14 weeks of the season and 80 per cent. in the first six months while only 31 per cent. of the total quantity is shipped when prices are at their best in Suptember He was of opinion that by the use of elevators grain could be safely stored through the rains without risk of heating or danger from The millers I have consulted on the subject are unanimously against the weevils. proposal. They point out that they cannot afford to let their capital lie idle for such a long period as six months and that a quick turn-over is of the essence of their present business. A big firm might easily have to tie up £200,000 in Bassein alone with consequent loss of interest, possible danger from fire and certain heavy insurance charges. Secondly, if the system were extensively adopted the present high prices in August, September and October would fall and the price would tend towards a uniform level throughout the year owing to the equalisation of supply Millers also are extremely sceptical as to the possibility of storing rice for six months without heating and they point out the awkwardness of loading steamers during the rains. Other minor disadvantages mentioned by them are the disorganisation of the freight market, though this would probably adjust itself, and the fact that stored grain breaks more easily in milling than fresh grain. Doubtless millers know their own business best and at present there seems little prospect of Mr. Noel Paton's advice being followed.

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36. Roughly four-fifths of the paddy grown for export in the settlement area Methods of transport. reaches Bassein by boat, the remainder being con-

veyed in bulk by rail. There are two main types of boat, namely the so-called pyat-paing or paddy gig owned by millers and hired out to n.iddlemen at a fixed charge per day, and secondly, the privately owned Burmese boat. Approximately 60 per cent. of the boat-paddy is brought into Bassein by pyat-paing and only 40 per cent. by Burmese boats. In appearance the pyat-paing resembles a small Thames barge and is usually manned by Coringhi coolies. The normal charge made by millers is two annas and six pies per day for each 100 baskets of cargo capacity in addition to the wages of the crew amounting to Rs. 3 per day. The average capacity of a *pyat-paing* is between 1,700 and 1,800 baskets. Freight charges vary of course with distance travelled, but assuming an 1,800 basket boat spinds 8 days on a trip the charges work out at Rs. 3 per 100 baskets. There are two varieties of Burmese boat employed for inland traffic, namely the *laung-sat* of 2,500 to 4,500 baskets capacity and the laung-go of about 1,800 baskets capacity. The laung-sat with its high richly carved stern is a more picturesque and capacious craft than the utilitarian *pyat-paing* but it is clumsier, slower and more expensive to work and is slowly dying out. The crew is as a rule Burman, the scale being one man to every 200 baskets of cargo capacity. The steersman on the larger boats is frequently faced by a row of empty bottles for use against river theeves. The crew are usually hired by the trip and not by the day or month, and the owner of the boat has to provide them with food in addition to wages. The boat used for sea voyages to the west coast is known as a kal-tu and has two masts with lateen sails. They have an average capacity of 1,000 baskets, but owing to the rocky coast they cannot be beached or lie close inshore and have to be loaded by means of small boats or sampans.

As will be seen from the following table, for which I am indebted to the courtesy of Mr. Leapingwell, District Traffic Superintendent of the Burma Railways, great and increasing use is made of the Bassein-Henzada branch line for transporting paddy to Bassein.

	Station			Miles	Pa	Paddy booked in		Freight per 100			
	Station.				1917.	1912.	1913.	ing 1,388 viss.			
	1			2	3	4	5_			6	
					Tons.	Tons,	Tons.		Rs.	۸,	P.
Tagongyi	24.64			9	950	1,710	1,516	1			
Konzingon		••		12	1,100	1,300	1,186	5	I	15	3
Begayet			•••	15	1,109	3,076	1,659		2	6	3
Kwinya		•••		18,	730	1,244	1,393	h			
Daga	•••		•••	23		729	266				
Gonmin				26	366	616	411	1	2	9	7
Apinhnase				29	491	997	1,058	IJ			
Yodayadet			••	35	3,261	3,597	3,742		3	7	• 6
Athok		•••		39	5,953	5,679	7,507	1	3	14	6
Kwingyi				46	756	1,796	3,547•		4	3	0
Vegyi				50	785	2,376	2,649	17			
Degon				53	693	825	699	}	3	7	6
Zayathla				56	3,952	4.735	5,878].			
Daihpyet		•••		61	2,993	3,782	3,669		5	6	9
		Total			23,142	32,462	34,180		1.800		

The line has opened up country, previously land locked, and, except at one or two stations, has not to fear serious boat competition. The lowest rate which can be made to yield a profit on running expenses being, according to the railway authorities, Rs. 3-8-0 per 100 baskets, the scale of charges cannot be considered high and the company has endeavoured to foster traffic by very low rates. However, boat transport is generally preferred unless substantial extra expense is involved. The chief reasons given for this preference are the loss of weight in the case of railway paddy as compared with boat paddy, the uncertainty as to whether waggons will be available or not, and thirdly, the alleged exactions of minor officials of the railway company. There is little substance in the last of these contentions as the distribution of waggons is not in the hands of station-masters, the supply being balloted for by the brokers themselves A customary gratification of Re. 1 per waggon is doubtless paid to station-masters but this is an insignificant voluntary offering which is entirely unnecessary and the remedy is in the hands of the payers. There is more to be said for the first two objections. Paddy despatched by rail is exposed to great heat while lying in the station yard and again after being loaded into the waggon; boat paddy on the other hand is transported in a much cooler and moister atmosphere and the difference between the two in weight averages 1 pound per 50 pound basket.

As regards the deficiency of waggons the railway company is in a difficult position. If more waggons were built additional capital would lie idle for nine months of the year, and the claims of the Henzada-Bassein section of the line must be postponed to a certain extent to those of the Kyangin-Henzada section where active boat competition exists Taking everything into consideration there is little real ground for complaint and the needs of the settlement area are met as fairly as is consistent with good management

37. The whole of the settlement area is self-supporting and absolutely secure against famine Heavy flooding in the Thabaung township has caused temporary inconvenience in the past, but this is very far removed from famine in the Indian sense, and even in the worst years it is unlikely the crop of the district as a whole will ever be less than a 12-anna one. As it is the settlement area, after satisfying all local requirements, sends enormous quantities to Bassein for export.

38. Previous to the year 1908 the standard of measurement was one of Standard of measurement. standard of weight was super-imposed on the standard of capacity and 46 pounds was assumed as the weight of a 9-gallon basket

Allowances for overweight are granted, the scale being $2\frac{1}{2}$ baskets per cent. for every pound by which the standard of 46 pounds is exceeded. Mr. McCiacken of Messrs. Steel Brothers very kindly supplied me with a list showing the average weight of paddy loaded for his firm at the various railway stations in the district. This works out to an average of exactly 49 pounds per 9-gallon basket. The settlement staff also undertook numerous weighments of boat-paddy in transit to Bassein. As was to be expected this paddy was found to be considerably heavier than railway paddy and to weigh 50'98 pounds per 9-gallon basket. Much depends on the season and on the variety of paddy grown, nga-kyauk and letywb-sin for instance are heavier than kauk-san and lam-bat, and the latter again are heavier than mok-seik-kyi grown in the Thabaung township and which rarely exceeds 48¹/₂ pounds. Taking everything into consideration I think it would be fair to assume that the average weight of a 9-gallon basket is 50 pounds over the whole area.

39. In the course of operations some 50 samples of paddy were weighed when bryage. averaged about 3 per cent., though there were considerable fluctuations dependent partly on the variety of the paddy selected and partly: also, no doubt, on the personality of the inspector doing the work. The average weight of a basket of this partially dried paddy was a little over 51 pounds. Additional samples of paddy were stored in a house for three or four months and then re-weighed with a resultant loss of about 6 per cent. Five per cent. has accordingly been allowed for dryage.

40. Owing to destruction of records it is impossible to give details of the character of past seasons. Character of past seasons. following table shows the outstanding characteristics from that year onwards :-

Agricul- tural year. Year. Pecentage of outturn Charac per acre of as com- pared with normal.		Character of season.	Rainfall	Remarks.		
1		• 3	4	5		
1901-02	107	Good	Rainfall excellent and turely .	A bumper crop.		
1902-03	83	Poor	Unusually he ivy. Early rain retarded ploughing. Late rain failed com-	Bad cattle disease prevailed throughout the district.		
1903-04	115	Good	Rainfall sati-factory and well distri- buted.	Better in settlement area than elsewhere in district.		
1904-05	4,6	Fair	Early rains good Late rains partially			
1905 -0 6	Q5 (Do	Excessive middle rains delayed trans- planting. Late rains poor.	Yery bad rind rpest caused death of stock valued at over seven lakhs.		
1906-07	88	Poor	Rainfall badly distributed and in defect throughout especially the early rains.			
1907-08	100	Normal	E mly rains good but slight defect in October affected higher lands.			
1908-09	100	Do.	harly rains good but excessive late rains in October and November caused damage by flocding.			
1909-10	94	Fair	Rainfall ill distributed, heavy in July, deficient in August and excessive in November	Heavy floods in the Thabaung township.		
1910-11	82	Poor	Early rains failed Late rains ex- cessive.	A bad year with heavy floods on the Ngawun in October and much cattle disease.		
1911-12	94	Fair	Early and late rains in defect. Middle rains good.	Unusual rise of Irrawaddy caused flooding in Tha- baung and Kyaunggon townships.		
1912-13	100	Normal	Rninfall timely and adequate			
1913-14	91	Fair	Rainfall irregular and badly distri- buted.			

The figures given in the second column are taken from the annual Season and Crop reports and are perhaps unduly low. Taking them, however, as they stand it is clear that cultivators can count on a satisfactory crop and are not exposed to serious calamities.

41. Crop measurements do not suggest there has been any serious deteriora-Deterioration of soils. much stress on these statistics and it is clear from the old classification that in reality there have been considerable changes in relative fertility. In some tracts, more especially in the one along the foot hills of the Yomas, abatement of flooding has led to a great improvement in lowlying land formerly water logged, while high land which has a shallow soil and has been longer cropped has begun to deteriorate. Crop measurements again do not bring out a very appreciable diminution in fertility which has taken place in the thickly populated area immediately surrounding Kyaunggon town on both banks of the Daga. In this area land classed as inferior at previous settlement has not been affected, but it is quite evident from external