

REPORT  
ON THE  
SETTLEMENT OPERATIONS  
IN THE  
MYAUNGMYA DISTRICT  
SEASON, 1916—19

BY  
S. GRANTHAM, I.C.S.



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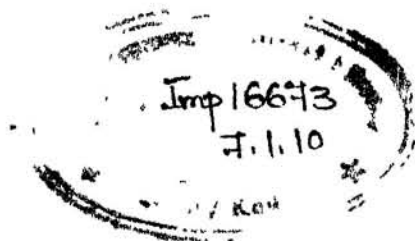
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**RESOLUTION**  
ON THE  
**REPORT ON THE SETTLEMENT OPERATIONS IN THE  
MYAUNGMYA DISTRICT.**  
**SEASON 1918—19.**

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Extract from the Proceedings of the Government of Burma in the Land Revenue Department,—  
No. 1S.23, dated the 6th June 1920.

**READ—**

- (1) Report on the Operations by Mr. S. G. Grantham, I.C.S.
- (2) Review of the Report by the Settlement Conference assembled at Bassein on the 5th June 1920 to consider the Report.
- (3) Letter No. 25—S.35, dated the 4th January 1921, from the Secretary to the Financial Commissioner containing the Financial Commissioner's recommendations on the Report.

**RESOLUTION.**—Mr. Grantham's operations covered roughly two-thirds of the cultivated area, or approximately half the entire area, of Myaungmya District. The other third of the cultivated area (or quarter of the entire area), lying in the north-west of the District, was dealt with at Mr. Duffin's Settlement of 1910—12, while the remaining quarter of the District, lying to the south towards the sea, is still mostly tidal swamp and jungle. The area comprised the five blocks named in paragraph 201 of the Report. The settlement of the first block is now revised for the first time, and that of the next three blocks is now revised for the second time, while the fifth block now comes under original settlement. In addition to those five blocks, Kyunpyat-taung *kwin* (number  $\frac{1106}{1522}$ ) recently transferred from the Ma-ubin to the Myaungmya District is dealt with in the review of the Committee.

2. The region is typically deltaic. Rice is the predominant crop, the areas under other crops being quite insignificant. The Settlement Officer's interesting and dramatic picture of conditions shows that the fertility of the soil is high, when at last freed from the obstacles that interfere with crops, but falls, after rising to a brief maximum output, to a lower though still fairly high and constant level. But life is, for the most part, lonely and monotonous with few bright relieving spots during the year. It is also highly strenuous and full of risks, for the locality is very unhealthy, cultivation is laborious in the extreme, and the settlers are exposed to dangers from wild animals when the jungle is first cut, and have to exercise constant ingenuity and perseverance to circumvent tides, floods, and other continually recurring difficulties. About 61 per cent. of the occupied land is rented, and almost all of this at fixed rents either in cash or in paddy. Many of the rents are at commercial rates, such rents amounting to 70 and 80 per cent. of the total rents in some tracts. Consequently the Conference has carefully compared the proposed rates with the rents.

3. The Lieutenant-Governor has read Mr. Grantham's report with interest. While it is certainly a monument of industry and of patient investigation carried out in difficult and trying circumstances, His Honour thinks it probable that Mr. Grantham in his efforts to arrive at the most accurate results has overelaborated a great many of his tests and figures. In the end, they have to be reduced to certain denominations, and it is a question whether the differentiation finally made could not equally well have been arrived at by less laborious calculations. Taking the various assessment groups, one finds that the rate proposed for Class I land ranges between Rs. 7 as a maximum and Rs. 3 as a minimum, that for Class II land ranges between Rs. 4 and Rs. 1-8-0, and that for Class III land between Rs. 1-12-0 and 12 annas. This means that land so classed in the several tracts will not be differentiated more than by the amounts specified in each tract, and that the differentiation over the whole district will not be greater than the extremes of the tracts. Mr. Grantham has placed so much importance on discriminating minutely between classes of land, not only by soil but by position, by liability to flood, tidal action, action of various pests, the proportion which each kind of land bears to the total land in the holding, and a variety of other circumstances, that one might be tempted to suggest that the assessment when applied to an individual will be far too stereotyped to take account of all these variations, upon which the Settlement Officer has laid so much stress. If Sir Reginald Craddock believed that it were possible to estimate all these variations with accuracy to suit all the individual circumstances of individual holdings and individual holders, he would be seriously exercised lest the distribution of the assessment, in spite of Mr. Grantham's care, was going to be inequitable. But it is impossible to base revenue assessments on anything but a rough approximation to differences in land, and the safeguard consists, not in any certainty that the revenue fixed is in exact correspondence or exact mathematical relation to the net profits of agriculture, but in the fact that the multitudinous enquiries made have demonstrated that the economic rent might have been fixed at a much higher figure than that adopted, and that the margin left for safety gives scope for these individual variations in the net outturn of the land, which cannot be ascertained by enquiries, however careful, but only by actual experiment over a large number of years. His Honour considers that what a Settlement Officer should strive to do is to prove that on general deductions from all facts as ascertainable by investigation conducted on different lines, Government would be logically justified in imposing a much higher demand than that which it is proposed to fix.

4. In the case of the present Settlement, however, the Lieutenant-Governor is fully satisfied that it would have been impossible to have thought out the allowances to be made in the several classes and situations of land in greater detail than Mr. Grantham has done. It seems to him that the cultivator has been given the benefit of every possible allowance and deduction that the ingenuity of the Settlement Officer could devise. As a result the land revenue in this area would, on the Settlement Officer's proposals, be only increased by a little over 4 per cent., and after rates have been varied according to the proposals of the Settlement Conference, the increase will still only be a little over 7 per cent. Considering the prices of paddy this is undoubtedly on the low side, and His Honour believes that the gross value of the produce of the Myaungmya District will, from the inception of the new settlement, be at least 20 per cent. higher than the value on which the

settlement is based. He fully recognises, however, that the Settlement Officer had to deal with a set of circumstances in which (as is not unusual in the history of Revenue Settlements in India) the settlement has borne too heavily on the poorer lands and as a corollary somewhat lightly on the best lands. Where cultivators have land of all qualities included in their holdings the consequences of this error are much mitigated, but it means that in villages where land of the poorest kind prevails the people are overassessed.

5. The Conference has examined the Settlement Officer's proposals with great care. Sir Reginald Craddock is satisfied that whatever error there may be in them it is not to the detriment of the cultivator. He, therefore, sanctions the Conference proposals for assessments as they stand. These include (a) the main kind rates for (i) orchards and (ii) gardens, (b) the crop rates for (1) betel and (2) *dhan*, (c) the exemption from assessment of (i) solitary fruit trees and (ii) second crops after one full assessment, and (d) the method and rates of assessments in towns and villages. He further sanctions the limiting of enhancements to 50 per cent by holdings on the lines adopted in Akyab and incorporated in the draft of the new Land Records Manual. He agrees also that tract 27 should be re-classified and the introduction of new rates in that *kwin* postponed till that has been done. He accepts the Settlement Officer's proposal for the assessment of land outside the settlement area as recommended by the Conference in paragraph 17 of its review and has no objection to the classification of some of those lands along with tract 27. He considers also that *kyunpyat-taung kwin* (number  $\frac{1106}{1522}$ ) should be classified as suggested by the Conference. The rates now sanctioned will be in force for a period of twenty years from the 1st July 1921, save in tracts 28 and 29 where conditions are unstable and much newly cultivated land has had to be treated leniently. In these two tracts the rates will be in force for ten years from the 1st July 1921.

6. It is left for the Financial Commissioner, and the Settlement Commissioner, to deal with the miscellaneous suggestions of the Settlement Officer. If any subject requires a reference to the Local Government it may be referred separately. In addition to the matters mentioned in paragraph 18 of the Conference review the suggestions of the Settlement Officer regarding (a) seed selection, (b) the notification of areas under Lower Burma Land Revenue Rule 77 for assessment at fallow rate, (c) crop-reapings by the Land Records staff, and (d) the continuation of the present rates in Pegyun *kwin*, made in paragraphs 122, 210, 291, and 430, respectively, of his Report, deserve attention.

7. Sir Reginald Craddock considers that praise is due to Mr. Grantham for the infinite care, patience and originality which he has applied to the problems before him, and for the efforts which he has made to mitigate the rigidity inherent in systems of Land Settlement in order to meet those diversities of circumstances which are inherent in agriculture.

By order of the Lieutenant-Governor of Burma,

W. BOOTH-GRAVELY,

*Revenue Secretary to the Government of Burma.*

From E. H. JONES, Esq., M.A., I.C.S., Secretary to the Financial Commissioner, Burma, to the Revenue Secretary to the Government of Burma,—No. 25—2S.—35, dated the 4th January 1921.

I am directed to submit for the orders of Government a copy of the Report on the Settlement Operations in the Myaungmya District, Season 1916—1919, by Mr. S. Grantham, I.C.S., together with a note of the Proceedings of the Conference assembled at Bassein on the 5th of June 1920 to consider the Report.

2. On account of defects in the soil classification the expiring settlement had operated inequitably resulting in a high assessment of inferior land, while lands brought under cultivation during the period of settlement were frequently over-classed. These difficulties were mitigated by the rise in the price of paddy, but a re-distribution of the demand was clearly called for. The increase in the price of paddy and in the rental value of land also indicated that some enhancement might be obtained from the better classes of land.

3. Mr. Grantham's Report though able and full of information is far too long and would have been improved by pruning and compression. At the same time the Financial Commissioner cannot help sympathising to some extent with Mr. Grantham's plea that he had no time to write more shortly. Mr. Grantham in spite of the fact that during the greater part of the settlement he was without the assistance of a European Settlement Officer, completed the settlement operations and submitted his Report within the period sanctioned, but Mr. Arbuthnot is aware that he only did so by working at very great pressure. He is therefore not disposed to criticize too severely the form in which the results of the settlement have been presented.

4. The main facts contained in the Report are summarized clearly in the note of the Conference Proceedings. The Settlement Conference which included Mr. Furnivall who had been for some time previously the Deputy Commissioner of the District, and Mr. Wallace who had a wide knowledge of the conditions of the Delta, examined the Report very carefully and Mr. Arbuthnot has little to add to their remarks. The tracing was carried out by Mr. Grantham with great care and the prices and cost of cultivation assumed are fair to the cultivator. The summary of outturns given on page 8 of the Conference Proceedings shows that the outturns assumed for the 2nd and 3rd classes are very considerably less than the average outturn according to crop measurement. The Settlement Officer it is true relied more on the outturns of crop measurement, but even so, in many cases his outturns at the rates assumed by him are considerably less than the outturns according to the cultivators's own statements. The Settlement Officer in paragraph 293 of his Report appears to justify these reductions on the ground that allowance has been made for the uncultivated area or inferior patches which are so common under the conditions of flooding and water-logging which obtain in these classes. On the whole, Mr. Arbuthnot is disposed to accept Mr. Grantham's assumptions though he considers that they are in many cases very favourable to the cultivator.

5. The Financial Commissioner accepts the assessment proposals of the Settlement Officer as modified by the Settlement Conference. With these modifications the net result will be a total increase in the annual demand of Rs. 1,14,327 or 7.22 per cent. in excess of the current demand. Mr. Arbuthnot considers that it probably would not be safe to take more in view of the condition of considerable portions of areas as described in the Report. The better distribution of the demand which will be secured under the new settlement will afford considerable relief to the poorer land on which the existing assessment has been excessive.

6. Mr. Grantham's Report contains much valuable information regarding tenancies and the condition of the tenant class which should be considered in connection with the recent report of Mr. Wallace's Committee on the same subject. In Mr. Arbuthnot's view the securing of some stability of tenure among the tenant class is a matter of great importance.

7. With the completion of this settlement Mr. Grantham severs his six years' connection with the Settlement Department. During that time Mr. Grantham has never spared himself and his two reports remain as valuable contributions to our knowledge of agricultural and economic conditions and to the theory of settlement. Mr. Arbuthnot has during the past five years had many opportunities of judging Mr. Grantham's work both in the field and in dealing with his reports, and he desires to record his appreciation of Mr. Grantham's services to the Department.

LIST OF DISCREPANCIES.

No. (a), Name (b) as given by Settlement Officer.		Number in (a) Settlement Map III, (b) District Index Map.		Number old (a) new (b) and Name (c) as given in Deputy Commissioner's list.		
1(a)	1(b)	2(a)	2(b)	3(a)	3(b)	3(c)
480A	Lindaingale ...	480	480	1057-1258	480	Kwelegale.
480B	Kwelegale ...	480	480	1057-1258	480	Nil.
730	Padawmu-ashe ...	730	760	1818	730	Pawdawmu ashe.
935A	Kyontaladayin ...	935	935	30-31	935	Kyontaladayin.
935B	Kyontaladayin ...	935	935	30-31	935	Nil.
1008A	Dayin ...	1008	1008	45-46	1008	Dayin.
1008B	Dayin ...	1008	1008	45-46	1008	Nil.
<u>1134</u>	Myitkalewa ...	<u>1134</u>	<u>1134</u>	130	<u>1134</u>	Myitkalewa.
<u>1438</u>		<u>1438</u>	<u>1438</u>		<u>1438</u>	
1372	Kungyangon ...	1372	1372	1717	1372	Mwehauk,
1163	Kyonthaik ...	1163	1163	1173-1174	1163	Kyugyaung.
1163A	Kyugyaung ...	1163	1163	1173-1174	1163	Nil.

NOTE — The Settlement Officer's list contains all the *kwins* appearing in the district list, but shows two *kwins* (sometimes with separate names) for *kwins* provisionally subdivided. The proper name for 1372 is doubtful; with this exception the notification may adopt the names and numbers given by the Settlement Officer.

Proceedings of the Conference assembled at Bassein on the 5th June 1920, to consider the Report on the Settlement Operations in the Myaungmya District, Season 1916—19.

*Members of the Conference.*

- MR. J. S. FURNIVALL, I.C.S., Officiating Commissioner of Settlements and Land Records, Burma.  
MR. W. V. WALLACE, Commissioner, Irrawaddy Division.  
MR. M. S. COLLIS, I.C.S., Deputy Commissioner, Myaungmya.  
MR. S. GRANTHAM, I.C.S., Census Superintendent, late Settlement Officer, Myaungmya, and MR. C E L'ESTRANGE, Superintendent of Land Records, Myaungmya, were also present at the Conference.

REVIEW.

1. The area dealt with in this Report covers 1,218 square miles and lies wholly within the Myaungmya District, the total area of the district being 2,642 square miles. Of the remaining area 642 square miles were dealt with in the settlement operations conducted by Mr. Duffin during the years 1910—12, and the balance, 782 square miles, has not yet been brought under settlement. The district occupies the western half of the Irrawaddy Delta and as a whole the formation is typically deltaic, but along the western boundary there are outgrowths of laterite and inferior limestone. Both tracts of country are represented in the area where Mr. Grantham has been working. The unsettled area comprises chiefly mangrove swamps and forests together with some comparatively recent extensions of cultivation which had not at the inception of these operations been brought under supplementary survey. The rural area occupied and assessed to cultivation covers about 480,000 acres. There are also five towns containing an assessed area of 1,791 acres.

2. The district was formed in 1893 by amalgamating the western township of the district then known as Thongwa, with the eastern townships of Bassein. The boundaries were revised when the Pyapon District was constituted in 1903 and there have been other minor changes. Acre rates for the assessment of land were fixed by a settlement officer in 1862 but the earliest settlements after regular survey were conducted by Mr Mathews in 1888-89 and 1890-91. Another large area was first brought under settlement by Mr. MacKenna in 1902-03. In the following year began the revision of Mr Mathews' settlements. In 1903-04 Mr. Lowry revised practically the whole of the area settled by Mr Mathews in 1888-89, excluding only a portion which fell outside the district. In 1904-05 he continued revision operations, but only one kwin treated in that year is included now as the remainder lies outside the present district boundary. In 1905-06 Lieutenant-Colonel Ormiston revised the area settled by Mr. Mathews in 1890-91. The present operations cover the areas dealt with by Messrs. MacKenna, Lowry and Ormiston and 14 square miles now settled for the first time. The area of the present settlement and its relation to previous settlements are shown in Map No. I attached to the Report; the areas settled by Mr. Mathews are shown in Map No. II.

The period of Mr. MacKenna's settlement has expired on the 30th June 1919, but the rates have continued in force under section 24 of the Lower Burma Land and Revenue Act. The rates expire in the remainder of the area on 30th June 1920, except for the one kwin dealt with by Mr. Lowry in 1904-05 where the current settlement is in force until 30th June 1921. If new rates are notified before the 30th June 1920 their application will have to be postponed in that kwin (Treingyun No. 1106) for one year and the period of settlement correspondingly reduced.



3. Except for a narrow strip along the western border the settlement area is essentially deltaic; everywhere the land consists of islands which are built up of little islands and these of less. Each small island consists of a rim of high land round a central depression, thus resembling more or less a saucer. In the most favoured area, between Moulmeingyun and Wakema, the land is almost level; during the rains the tides irrigate without damaging the crops, and from October onwards do not affect the fields. Elsewhere, especially towards the north-east, the depressions are deeper and the rims shallower; the poor land is more liable to floods and there is a smaller area of good land. Towards the south the water becomes increasingly saline, the passage from fresh water to salt being indicated by the limits for cultivating dhani (*Nipa fruticans*), which only grows in water that is salt but not too salt. The higher lands on the west are sterile, and have probably been impoverished by denudation. On the west and south there are large areas of jungle where mangrove swamp and forest hinder the progress of cultivation.

4. The population of the district in 1911 was 334,852, and that of the present settlement area for the same year is estimated at 225,537. It is predominantly rural and even the so-called villages frequently consist of scattered hamlets of two or three or less than ten houses. There are only five towns with a combined population of little over 20,000. These towns are almost wholly dependent upon agriculture; they collect the produce of the cultivators and supply their requirements. Some of the produce is milled in these towns and also in mills scattered over the countryside but the great bulk of it is exported to Rangoon or Bassein. The only occupation which competes with agriculture is fishing and that is localised within certain areas. About 66 per cent. of the people are Burmans, and nearly 30 per cent. Karens; the remainder, about ten thousand, comprising some eight thousand Indians, equally distributed between Mahomedans and Hindus, and about two thousand Chinamen.

The non-indigenous races tend to be more interested in trade than agriculture, the Mahomedans specialising in the importation of piece-goods and the Chinamen in retail trade, while the Hindu element, although comprising traders, ordinarily depends on manual labour. But all may take to agriculture if occasion offers.

In the settled area and where the water is fresh the climate is not conspicuously unhealthy, but the district has at least its fair share of fever and consumption, and, especially during the dry season, local outbreaks of smallpox and cholera are frequent. During the operations the district suffered heavily from the epidemic of influenza. In the area of recent and extending cultivation malaria is deadly and has contributed much towards the difficulty of building up a sound agricultural economy.

Natural facilities for the export of produce by water are good but capable of improvement.

Very careful and detailed enquiries have been made into the cost of living and the settlement officer finds that throughout the area it is fairly uniform at about Rs. 17 per acre for Burmans and Rs. 16 per acre for Karens. The cost per head averages Rs. 95 for Burmans and Rs. 83 for Karens, and the cost per family is rather above Rs. 400 a year for owners and rather below that amount for tenants. The cost per family in the enquiries held during the settlements between 1902-03 and 1905-06 was found to be Rs. 200 per family or rather less over most of the area covered by Messrs. MacKenna and Lowry while Lieutenant-Colonel Ormiston calculated the cost per family at Rs. 300. But there is no sufficient material for a satisfactory comparison between the present and former estimates, and the settlement officer accepts the opinion generally held among the people that prior to the war the standard of living had remained fairly constant for some years. An attempt to classify the people examined by definite standards indicated that only 2 per cent. were poor to the extent of suffering privation, 22 per cent. found it difficult to make ends meet, 72 per cent. were comfortably off and 4 per cent. well to do.

5. Mr Grantham has made careful and exhaustive enquiries into all the more important aspects of agricultural economy, and his discussion of the results contains much that is interesting and of permanent value. But in this note it is only possible to summarise briefly the more salient-features :—

(a) *Occupancy*.—There has been a rapid increase in the occupied area since the settlement of Mr. Mathews, and it has continued during the currency of the expiring settlements. In 1902-03 the area assessed to land revenue outside towns covered 370,959 acres, and by 1917-18 this had increased to 477,984 acres [Statement 3(a)]. The rate of extension has been increasing and a further development may therefore be expected, but the part most attractive to pioneers seems to lie outside the area under settlement. Land taken up recently has been inferior or only cultivable with difficulty or remote, and as this has been assessed by revenue surveyors at rates applicable to the better land previously occupied, the large area of the extensions has an immediate bearing on the proposed demand.

The ordinary cultivator, whether owner or tenant, works about 20 to 25 acres. Enquiries showed that two-thirds to three-quarters of the occupied area was held in estates of under 100 acres, that a considerable number of estates cover between 100 and 200 acres, but that little land is held in estates above 500 acres except by a few persons with very large estates exceeding 1,000 acres and in one or two cases approaching 2,000 acres. According to the statistics of the Land Records Department 24 per cent of the occupied land in the district is held by non-agriculturists, and nearly two-thirds of this area by people who are classified as non-resident; but analysis of the settlement records leads Mr Grantham to the opinion that 30 to 31 per cent. represents more correctly the area in the hands of non-agriculturists. Figures extracted at intervals of five years indicate that the proportion is increasing.

(b) *Alienations*. (i) *Sales*—The records of sales as found in the registers of the Land Records Department have been analysed for the year 1902-03 and every fifth succeeding year. The results are tabulated in Statements 6A and 6B. Sales recorded by the Settlement Department are tabulated in Statement 17. According to the Land Records figures for 1907-08 and 1912-13, 7 per cent of the whole land was sold annually and even in 1917-18, during the war, 4 per cent was sold. The figures with few exceptions are remarkably uniform over the whole district and indicate the general facility with which land changes hands. The average sale value per acre of rice land in 1917-18 according to the Land Records Department was Rs. 75 and according to the settlement figures, which however do not relate to any single year, was Rs. 86. The price of land exceeds Rs. 100 an acre in Tracts Nos. 14, 12 and 23 and also according to Statement 17 in Tracts 15, 19 and 22 while on the other hand in Tracts 8 and 9 the value of land is only Rs. 9 and Rs. 20 per acre respectively. The settlement officer suggests that although the proportion of inferior land transferred has increased each year the average sale price rose by 50 per cent. between 1902-03 and 1907-08, after which it remained stationary for a time and again nearly doubled between 1912-13 and 1917-18. He draws attention to the large proportion of land sold to pay off debt, implying that the sale involves a fall of status from owner to tenant or labourer.

(ii) *Mortgages*.—The statistics regarding land encumbered have been similarly analysed and the results are presented in Statements 7A, 7B and 18. The figures for the earlier years are of doubtful value but it appears that between 1912-13 and 1917-18 the average encumbrance on rice land has increased from Rs. 34 to Rs. 57 per acre. In several tracts the mortgage value approaches or even exceeds Rs. 50 per acre and these are ordinarily the tracts where the sale price is also high. The settlement officer suggests that the figures in the statement do not represent true mortgage values, but it is noticeable that they bear a remarkably uniform proportion to the corresponding sale values, which rather conflicts with his suggestion.

The sale and mortgage values are useful as a guide towards distributing the assessment and they are therefore tabulated below when discussing the proposals.

(c) *Tenancies.*—The statistics with regard to tenancies are given in Statements 5 and 16; the former is compiled from Land Records registers and the latter from information collected during settlement. The area of paddy land let to tenants on a competitive basis amounts to 220,451 acres and allowing for omissions and non-competitive tenancies the total rented area is estimated in paragraph 171 at 280,000 acres, or 61 per cent of the total area. With an insignificant number of exceptions the tenants pay a fixed rent in either cash or paddy, and fixed produce tenancies, with the rent payable in paddy, form more than 99 per cent. of the whole whether measured by tenancies or by areas. Statistics have been recorded to show the number of exproprietary tenants, but in Lower Burma such figures are of little value. The tenant ordinarily works the land for one year only; from Statement 16 it appears that 44 per cent. of the tenants with 39 per cent. of the rented area had not occupied the same land in the previous year while only 18 per cent. of the tenants with 22 per cent. of the rented area had worked the same land for over five years. The Land Records Department shows only 13 per cent. of the tenants as working the same land for more than five years; the settlement officer was unable to explain the discrepancy. Generally the contract of tenancy is made by a simple oral agreement, but if the tenant is unknown or of doubtful solvency or character security may be demanded. Out of the practice of asking security there has arisen in some parts of the area a system of subtenancies. The settlement officer finds that there is rarely any difference between the rent paid by the tenant-in-chief to the landlord and the sum of the rents paid by the actual cultivators so that the tenant-in-chief makes no profit on the transaction and the system does not at present appear harmful. Although tenancy contracts are generally oral, in some cases, estimated at 14.9 per cent., a written contract is demanded. Often the contract is only reduced to writing some time after the tenancy has begun and when the tenant is getting involved in debt; in such cases it is usually known as a "coolychok." The tenant then expressly declares that the crop is the property of the landlord and that he is cultivating the land for wages as agent or servant of the owner; there is usually a declaration that he comes under the Workmen's Breach of Contract Act, XII of 1859. The settlement officer does not regard the system as widespread or very dangerous. A system known as "kaukbinap" (paragraphs 146, 198) is liable to be confused with written contracts of the nature just described. Some owners supply everything except labour and take over the fully planted holding before the crop ripens. But in this case the cultivator actually is what he purports to be, an agent or servant of the owner, and is not a tenant. The possibility of protecting tenants is examined and it is suggested that general protective legislation is unsuitable because landlords and tenants would jointly endeavour to evade it. The settlement officer would prefer economic to legislative action. He would endeavour to reduce the number of competing tenants and to organise those who could not be drawn off. He would reduce the number of competitors by the colonisation of new land on co-operative lines and the balanced development of remunerative non-agricultural industries. For the organisation of those who still remain as tenants, he suggests co-operative experiments. He emphasises the difficulty under present circumstances of introducing co-operative credit societies among tenants, as these would only give to the landlord as rent profits now taken by the money-lenders as interest. The solution which he favours is to organise the tenants in a trade-union or society that would co-operate in cultivation and not only in raising money. He suggests however legislation to protect the landlord by giving him a title in the crop up to the amount of a fair rent.

There has been a large and steady increase in the pitch of rents in almost every tract; in some tracts it is very high and in Tract No. 12 upwards of 72,000 acres are let at an average rent of Rs. 20 per acre. The most highly rented lands are not always the best and in the newer areas, where tenants of inferior character tend to congregate, the rents may exceed an economic standard by including an allowance to cover the risk that the tenant may abscond. In other parts rents are little more than nominal. The settlement officer discusses rental values as a basis for assessment but makes no use of them because rents cannot be determined by soil classes and because the cultivating owner does not

pay rent. We are of opinion that in this he goes too far and that the rental values may be more useful as a guide to assessment than he considers; this matter will be dealt with when considering the proposals for assessment.

(d) *Labour*.—Except where land is held by Indians practically all the labour is employed seasonally. There is a separate contract with different men for ploughing, transplanting, tending cattle, reaping and earthwork but the tendency towards organisation upon industrial lines by the division of labour is not so pronounced as in some other parts of Lower Burma. Thus the cultivator usually employs the same men for threshing and reaping instead of having the crop reaped by gangs of itinerant coolies. The greater part of the labour, except for earthwork on which Indian coolies are commonly employed, appears to be of local origin and there are few immigrants from India or Upper Burma. Similarly the tending of cattle is largely performed by members of the cultivator's family. Wages are almost invariably arranged in terms of produce, but a large proportion is paid in cash on the *saba pe* system, i.e., at the price current for the future crop.

(e) *Stock and Grazing*.—Both oxen and buffaloes are used; the choice between them depends on circumstances. The average area cultivated per yoke was found to be 17·4 acres, and the settlement officer is of opinion that having regard to the conditions and supply of labour the number of cattle is adequate, disagreeing in this matter with the view of the recent Stock Breeding Committee. Great care is taken of the plow cattle and oxen and sometimes buffaloes are tucked up under mosquito curtains even in places where their owner needs no special protection for his skin. There has been no serious outbreak of cattle disease in recent years. Grazing grounds have been badly neglected, but it is doubtful how far they are needed except in those localities where buffaloes are kept.

(f) *Debt*.—Statistics regarding debt are given in Statement 15. The settlement officer has attempted to distinguish between temporary debts, those taken and repaid between the closing of accounts of two successive harvests, and permanent debts, which are carried over to the next year. He emphasises the importance of distinguishing as regards indebtedness between cultivators and assesses. He also draws attention to the fact that all the worst cases of indebtedness are excluded because the figures only represent people who are still cultivating land and have not fallen into debt so heavily as to become labourers, and do not adequately represent the case of people who have lost their land through debt and become tenants. He found himself unable to adhere usefully to the settlement instructions relating to the record of indebtedness and the statement in which he summarises his results differs from that prescribed. We agree that the method adopted gives more useful information and is less likely to be misinterpreted, but he should obtain sanction before departing from the instructions and the report does not show that he did so. The figures show that nearly half the families examined were involved in some degree in permanent indebtedness, but for over 70 per cent. of the indebted families the average permanent debt did not exceed Rs. 500. There seems to have been a large increase in debt during the currency of the expiring settlement and it appears that cultivating owners are conspicuously more indebted than formerly. But as a class, though not necessarily as individuals, they are still solvent and likely to remain so, unless the price of paddy falls for a considerable time. The average rate of interest is  $2\frac{1}{2}$  per cent. to 3 per cent. a month. Two-fifths of the debts among cultivating owners was ascribed to investments in land and cattle and for the heavily indebted tracts the percentage of debt in this class is generally above the average. Trading in paddy is responsible for a considerable proportion of the debt classed as unproductive, but so far as the figures show unproductive debts only form 13 per cent. of the total. The settlement officer comes to the conclusion that permanent indebtedness can only be treated properly in an enquiry particularly directed to that end and we agree that statistics of this nature are difficult to collect during settlement and still more difficult to interpret.

As regards temporary loans it appears that 59 per cent. of the cultivating owners and 75 per cent. of the tenants take advances to pay their way till harvest. These are mostly taken without security and the figures indicate a preference for loans at cash interest rather on *saba pe*, i.e., by selling part of the standing crop.

Earlier in the season money is borrowed on a cash interest and from October onwards on *saba pe*. The settlement officer draws attention to the difficulty experienced by cultivators in taking cash loans for current expenses in instalments as required. They have to borrow a round sum at the beginning of the season, leaving the surplus beyond immediate disbursement to lie idle until it is required, or else borrow later at higher rates on *saba pe*. Neither Burman nor Indian money-lenders make a practice of lending money with a view to acquiring land; their object is to earn interest on their money and they are reluctant to take over their client's land in settlement of his debts. Practically no advances have ever been made under the Land Improvement Loans Act, but a negligible sum is advanced annually under the Agricultural Loans Act. Very little progress has been made in the direction of Co-operative Credit as a means of financing agriculture; this is partly attributed to the individualist character natural among pioneer cultivators and their immediate descendants.

(g) *Occupancy by Races* — Eleven per cent. of the landlords are Indians and nearly half the tenants of Indian landlords are Indians. Indian employers almost always employ Indian labours, but the Burman rarely engages an Indian who cannot be treated as a member of a Burman family. There is therefore a distinct tendency for Indian landlords, tenants and labourers to be associated, but this cannot be ascribed to any antagonism between Indians and Burmans. Karen landlords similarly give a preference to Karen tenants, but this is ascribed to their general suspicion of strangers, the Karen tenant usually belonging to the same hamlet as his landlord.

(h) *General Summary* — The general impression derived from the Report is that the agricultural economy is unstable. Over half the land is occupied by tenants. Few have any substantial capital, the majority must borrow to pay their way till harvest, many are in debt from one season to the next. Most of them surrender their holdings, either voluntarily or under the pressure of accumulated debt, within a year or two; some take up larger holdings, some are reduced to working on a smaller scale or become labourers. Similarly the land passes readily from one owner to another, but there is a steady tendency for it to fall into the hands of the non-agriculturist. Many cultivators who appear to own land are really tenants paying interest to the money-lender instead of rent to a landowner. This has a direct bearing on the proposals for assessment. Rent receivers can afford to pay a large share of their receipts as revenue, but the cultivator who is paying interest may be crippled by a comparatively small enhancement.

6. (a) *Area in the Year of Settlement*.—To gauge the effect of proposals for a revision of assessment the revised rates must be applied, unit by unit, to the land as assessed under the current settlement. The year for this comparison is the Settlement Year. Mr. Grantham has applied his proposals to different areas in different years, as shown in paragraph 227. Thus the year of settlement is a fictitious year and the figures showing the current demand do not give the actual revenue of the district in any single year. There are also, as noted in paragraph 316, discrepancies between the areas as compiled by the Land Records Department and by the Settlement Department, but these do not affect the general accuracy of the result and the comparison between the present and proposed demand made in Statement 19 may be accepted as correct.

(b) *Main Kinds and Tracting*.—Three Main Kinds of cultivation have been recognised; the cultivation of Rice land, of Orchards and of Vegetable Gardens, indicated respectively by the symbols R, H and Y. The last two Main Kinds also include miscellaneous plots of subordinate importance, and, as explained in paragraphs 258, 399, the Rice land Main Kind also includes some land not at the time of classification under rice. In addition to these Main Kinds it is proposed to assess dhani and betel vines at crop rates.

It is unnecessary to distinguish between the methods of cultivating orchards and vegetable gardens in different parts of the district and so far as these Main Kinds are concerned the whole district is one Primary Tract.

With rice land however the formation of Tracts is necessary. It is contemplated in the Settlement Instructions that the first operation of settlement shall be to divide the country into Primary Tracts for geographical areas with distinctive physical and economic features common to the whole tract. In an area such as the delta where obvious distinctions are so imperceptible and real differences so great there is much difficulty in adhering to this procedure and the settlement officer found it impossible. Instead of analysing the district as a preliminary measure he gradually built up tracts in the course of his operations so that the last item of field work was the allotment of the last kwin to its appropriate tract. The chief objection to this procedure is the tendency to form tracts which have nothing in common but similar standards of fertility. The settlement officer has avoided this by his method of soil classification. His procedure was approved by the Settlement Commissioner and has resulted in tracts which comply with the definition much more closely than if they had been formed by analysis. As a result of this process he has built up 22 primary tracts; most of these are geographically continuous, but in some the component kwins are disconnected. These tracts are numbered 8 to 29 in continuation of the series 1 to 7 in the area dealt with by Mr Duffin.

(c) *Net Produce*.—The prescribed basis of assessment is the net produce of cultivation, the balance remaining after the expenses of cultivation have been deducted from the value of the gross produce. To ascertain this and to distribute the assessment it is necessary to divide the land of each tract into classes, each of which can be assessed on the assumption that all the land in the class is equally fertile; it is necessary to classify the land to ascertain its outturn, the value of the outturn and the cost of cultivation. Classification was only needed in the case of rice land; the other two main kinds are not sufficiently important.

(i) *Classification*.—The classification of the land was conducted by the people and recorded by the settlement staff. As a check upon the classification soils and subsoils were examined and attention was paid to the kind of paddy grown, the weeds, the kind of jungle originally on the land, the detailed relation of the cultivation to the tide, and similar agricultural factors, but the essential basis of comparison was the profit derived from cultivating different plots of land. Thus the classification represents the sum-total of differences in outturn, security, lasting power, cost of cultivation, etc. Soil class lines were drawn where the people considered that two holdings could not equitably be assessed at the same rate.

This procedure is open to criticism in three respects. The first is that where conditions are uniform people tend to recognize smaller distinctions than where there are large and obvious differences. But in the result the difference between classes is found to represent a difference of about 10 baskets in the outturn per acre and the settlement officer explains to the Committee that this happened partly because the cultivators tended to disregard minor distinctions and partly because they do treat their land as falling into three distinct levels which they take up in successive parts of the season so that the naturally continuous gradation of level is changed to three almost distinct classes, each with its internal gradation but differing in a considerable degree from the next class. Uniformity of standards from kwin to kwin was maintained with the assistance of representative cultivators from each kwin and checked by working round a small circuit and comparing the last kwin with the first. The second objection to the procedure adopted is that cultivators tend to value land on the basis of net profit over a long period and not on the assessment basis of net produce in the year of cultivation; they would prefer a field yielding 20 baskets a year for three years to one yielding 50 baskets one year and then being flooded for two years, but the latter should pay a higher rate on the present system of assessment. The third objection is that the classification takes account of many factors not represented in the measured outturns which will therefore exaggerate the average fertility except in the highest class. The settlement officer questions the validity of these objections and almost the only practicable alternative to that adopted by him is a classification on the basis of gross produce, which is open to more serious objections. It is clear that the work was conducted and supervised with great care and we are of

opinion that the classification may safely be accepted as an instrument for distributing the assessment and, within the limits indicated above, as a method of arriving at the average outturn

Very extensive changes in the former classification were necessary, partly owing to the physical changes, mostly on account of the broad lines adopted in earlier settlements and the introduction of a third class. The revision of the former classification is exhibited in Statement 20; this has never previously been attempted in Lower Burma and the statement and method of compiling it form a new and valuable contribution to settlement technique.

(ii) *Outturns.*—For each soil class a standard outturn has been assumed. The settlement officer has reversed the ordinary procedure for estimating the standards. The usual practice is, by excluding unsuitable experiments, to adjust the figure given by crop measurement to one deemed suitable and base the standards on this figure, modified where necessary in the light of personal experience and the outturns admitted by the cultivators. But he has based his assumptions primarily on enquiries in the field. The enquiries were directed in the first place to establish not the absolute outturns but the relative differences in outturn between the soil classes in one place and also between these and corresponding soil classes in the neighbourhood. Everywhere however there is a tradition as to the outturn of good land and the degree of inferiority of poorer land. By continuous enquiries the relative differences were tested and gradually an estimate of absolute outturns was built up. This is the basis of his system of assumptions as shown in column 3 of Statement 10. The estimate arrived at has been checked by the admitted yields for holdings and the results of crop measurement have been considered. Crops were reaped in 3,846 fields uniformly of about half an acre and totalling 2,173 acres; the experiments were not necessarily repeated in the same fields in successive years; none have been rejected except for some error of procedure. An attempt was made to record the cultivator's estimate of a normal outturn for each field before the crop was reaped. The figures have been tabulated in italics in columns 16 to 22 of Statement 10; but the normal should have remained constant from year to year and, as the settlement officer points out, the variations noticeable shows that the attempt was unsuccessful. The admitted outturns which have been tabulated in the same statement cover every holding which entered into any of the statistics. Here again an attempt was made to ascertain the normal by asking the outturns of the land in the two preceding years, and thus working up to an estimate of the yield which the cultivator would ordinarily expect. But in this case also the result has not been satisfactory.

The following table compares the outturns assumed with those given by crop measurement. In the measurement an allowance of 10 per cent. for drying has been made.

STATEMENT A.—*Summary of Outturns.*

Tract	Assumed outturn.			Average outturn according to crop measurement.			Tract.	Assumed outturn.			Average outturn according to crop measurement.		
	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>		—	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>1</sub>	R <sub>2</sub>
8	32	22	12	33	26	23	19	50	34	18	49	47	31
9	35*	24	14	34	28	22	20	42	28	15	42	39	36
10	42*	29	16	40	32	25	21	46*	32	18	40	38	30
11	45*	30	16	44	39	31	22	42*	30	16	36	35	25
12	51*	36	20	49	44	31	23	48	33	18	55	46	38
13	48	33	18	49	39	—	24	44*	30	16	40	35	26
14	50*	34	18	49	42	26	25	40*	28	15	39	33	30
15	46	32	16	48	41	31	26	36	25	14	36	30	28
16	42	28	14	46	37	30	27	34	24	15	—	30	23
17	38	26	14	42	37	25	28	42	28	14	44	39	22
18	45	30	15	51	43	34	29	38	26	14	49	38	30

NOTE.—An asterisk distinguishes assumptions in excess of actuals, italics distinguish assumptions more than five baskets per acre below actuals.

It will be seen that in some tracts the outturns assumed for first class soils are higher and sometimes much higher than is indicated by crop measurement; such cases have been distinguished in the table by an asterisk. On the other hand the assumed outturn falls below the experimental figure by more than five baskets in three cases on first class land and in fourteen cases in second class land; these are distinguished in the table by italics. Crop measurements are of little assistance in estimating the outturns of third-class soils and the settlement officer has disregarded them. The settlement officer discusses the value of crop measurement as a basis of assuming outturns and there is much force in the general drift of his criticism and in his contention that the results of crop measurement must be accepted with caution and interpreted in large groups. But obviously great pains were taken to arrive at crop measurement figures which might safely be used as a basis for assumptions and we consider that he is not wholly justified in discarding them so cavalierly. As will appear later, critical examination of his assumptions indicates that in their general effect they are moderate, sometimes excessively moderate, but to assume outturns for first class land above the figure given by crop measurement is unsafe and, without special justification in exceptional circumstances, is unsound. It is also unnecessary, because the share of the net produce which it is permissible to take as revenue is quite high enough to allow of moderate assumptions.

(iii) *Prices and Assessment Tracts.*—There are two recognised methods of determining prices. One is to calculate from the prices annually recorded by the Land Records Department the average local price in each tract. The other method is to ascertain the average price at the export market and to arrive at the local price by deducting the expenses of carriage. Changes in the method of transport and other considerations rendered it inexpedient to utilise the Land Records Statistics. The price therefore had to be based on that of the export market. There are two export markets, Rangoon and Bassein, but analysis of the prices at Bassein showed reason for discarding them. The prices assumed for the whole area have therefore been based on that obtaining at Rangoon. They have not been calculated, however, by deducting the cost of carriage, but by ascertaining the relative prices in each village and, by enquiries from brokers, ascertaining the relation between local prices and prices in Rangoon. This eliminates the difficulty of ascertaining the cost of carriage. Enquiries in particular localities showed that where the ordinary method could be accurately applied it gave a similar result and it may, we think, be accepted that the prices relative to the Rangoon price are accurate. The bulk of the paddy in the settlement area is that graded as "best boat paddy" and the prices quoted for this by Messrs. Morrison have been adopted as the basis of calculation.

The average price at Rangoon after correction on mathematical principles by excluding extreme variations was found to be Rs. 104.3 for the period 1900—1914 and Rs. 101.7 for the period 1900—1919. The settlement officer has assumed Rs. 102 as the price for valuing the produce. This is equivalent to the price of Rs. 105 adopted on a twenty years basis by the Wheat Controller in 1918 for "first quality Europe paddy." On the basis of this Rangoon price he assumes a figure of Rs. 101 for the average price at Bassein. This is Rs. 3 above the corrected average based on the prices quoted in the Bassein market, but as mentioned above he has discarded these as untrustworthy.

As in the classification of land, enquiries were first directed towards ascertaining relative values; thus Price Tracts, areas of uniform produce values, were gradually built up and each kwin was assigned to its appropriate tract as the necessary information was available. The resulting Price Tracts are shown in Map IV and by super-position upon the 22 Primary Tracts yield the 32 Assessment Tracts shown in Map III; as some of these are divided by township boundaries the number of Assessment Tracts for statistical purposes is 37.

(iv) *Cost of cultivation.*—The enquiry into the cost of cultivation has followed, except in two respects, the settlement instructions and the actual average cash expenditure of representative cultivators can be ascertained from the results tabulated. But the figure assumed includes an allowance for interest on money



borrowed to spend on cultivation, and as regards the expenditure on cattle the settlement officer has endeavoured to arrive at a closer approximation than would have been given by adhering to the instructions. The enquiry into the expenditure on cattle has always been found difficult and it is peculiarly difficult in such an area as has been dealt with in these operations where the agricultural economy is unstable and from year to year men cultivate holdings of widely different area. There is also the difficulty ordinarily experienced of attempting to ascertain what proportion of profits on cattle-breeding should be debited as expenditure on cultivation. The settlement officer has endeavoured to find the stock held at the beginning of the four years taken for enquiry and from the apparent cost per acre as given by following the settlement instructions he has deducted a sum to represent the increased value of stock per acre during the four years. If full information were forthcoming the method should give a close approximation to the annual expenditure on replacement of stock, and it was approved by Mr. Lowry as Settlement Commissioner. But the faulty memory of cultivators and other causes preclude an accurate result and it is very doubtful whether a satisfactory estimate of the expenditure debitable to cattle can be reached by any means. The figure is necessarily conventional and, so long as it is arrived at in the same manner in every settlement so far as the circumstances of the area permit, it has in some degree a value for comparison. It is more important that the figure for cost of cultivation should be comparable in different districts than that it should be a rupee more or less nearer the correct amount. Thus in the present instance the settlement officer finds that figures arrived at in the ordinary way are Rs. 2.6 per head of stock above the result on this method, Rs. 8.4 per head of stock against Rs. 5.8 per head. But to counterbalance freedom from disease in the period of enquiry he has assumed a cost of Rs. 8.00 per head and the difference distributed over the area worked per yoke is negligible. Similar considerations apply to the inclusion of interest. The expenditure on cultivation calculated by the settlement officer may be accepted, therefore, as in accordance with the convention, and applicable for arriving at the net produce.

(d) *Other Data*—The settlement officer has discarded land and rental values in framing his proposals. It is therefore unnecessary to examine these until considering his proposals in the following paragraph.

7 (a) *Financial effect of previous settlements*—It is difficult to ascertain the revenue demand prior to the settlements of Mr. Mathews, but about 1880 the rates were summarily enhanced by rates varying from 6 to 25 per cent., and at the time of settlement the average incidence was Rs. 1.65 per acre in the area covered in 1888-89 and Rs. 1.95 per acre in that of 1890-91. Mr. Mathews' operations resulted in an enhancement of 12.10 per cent. in the earlier year and 35.4 per cent. in the later year. In the area dealt with between 1902 and 1906 Mr. MacKenna's settlement gave an increase of 12.7 per cent., Mr. Lowry's of 4.2 per cent. and Lieutenant-Colonel Ormiston's of 2.9 per cent. The average incidence per acre matured for the ten years from 1908 to 1918 was Rs. 3.65. During the last thirty years therefore there have been revisions at short intervals which have resulted in a large increase both in the demand and in the incidence per acre.

During the currency of the expiring settlements there has been an increase in the incidence per acre. The settlement officer contrasts the incidence of 3.31 at the beginning of the current settlement with that of 3.44 in 1914-15, as shown in the forecast, and ascribes it to overassessment of extensions by surveyors. But the incidence per acre matured rose from 3.18 in 1904-05 to 3.74 in 1911-12 (Statement 2), since when it has gradually fallen. The rise is partly due to the introduction of new rates, partly to the expiry of intermediate rates and although the overassessment of extensions has been a contributory factor the settlement officer seems to have overestimated its importance.

But the financial history indicates the advisability of moderating the new demand.

(b) *Forecast.*—According to the forecast prepared by the Deputy Commissioner in 1915 an increase of 16·19 per cent. on rice-land cultivation and of 15·76 per cent. on all kinds of cultivation was expected. The total assessment on the area for settlement was then given as Rs. 16,52,102 and the assessment after the introduction of the new rates was expected to be Rs. 19,12,494. The Commissioner suggested that these increases were unlikely to be obtained and was inclined to reduce the Deputy Commissioner's forecast by at least 1 per cent. It was apparently considered that even if the Commissioner was right in regarding the estimate of the Deputy Commissioner as unduly optimistic the operations would still give a considerable increase of revenue, and sanction was accorded without any definite instructions regarding the probable result financially. The grounds cited by the Deputy Commissioner in support of his estimate were that there has been an increase in the occupied area, a rise in the price of paddy, and an enhancement in the pitch of rents.

(c) *Comparison of Forecast with Results.*—Whereas the local officers anticipated an enhancement by about 15 per cent. the settlement officer has only proposed an enhancement of 4·8 per cent.

For this divergence from the original estimate he gives the following explanation:—

(a) The newly occupied area has in general been overassessed. The Deputy Commissioner expected an enhancement where there had been large extensions, thinking presumably that they had hitherto been leniently treated. But as recent extensions have been heavily assessed it has been necessary to reduce the revenue on such lands and in those tracts where there are large extensions the proposed demand shows either a very small increase or an actual decrease.

(b) There has been deterioration in some tracts on account of floods.

(c) He finds that over large parts of the area the fertility of the land did not justify the classifications and the outturns assumed.

(d) A further argument for a moderate demand is found by the settlement officer in the fact that landlords cannot be taxed heavily without causing serious distress to cultivators who have bought the land with borrowed money and pay interest to the money-lender what as tenants they would pay in rent to the landlord; so that although the cultivating owner appears to derive from his land a profit exceeding the cost of subsistence for a tenant by the amount which the latter pays as rent, he cannot afford to pay in addition to the interest the revenue which a landlord can comfortably pay out of his rent.

(e) He also refers to the financial history of the district which has just been summarised.

8. (a) *The Assessment Fraction.*—After consideration of local circumstances,

The Proposed Assessment on  
Rice Land.

the current demand and the assessment sanctioned in the part of the district which Mr. Duffin settled, the settlement officer bases his proposals on fractions of the net produce representing 16 per cent. in the area dealt with by Mr. Lowry, 19 per cent. in that dealt with by Mr. MacKenna and 20 per cent. in that dealt with by Lieutenant-Colonel Ormiston. But he uses those fractions as guides and not as fetters, and varies them where necessary for particular tracts and soil classes. He has not applied them at all as regards third class land. The rates proposed for third class land depend on those proposed for the higher classes; where the second class rate does not exceed Rs. 2·00 the third class rate does not ordinarily exceed Re. 1·00; as the second class rate rises the rate proposed for third class rises to Rs. 1·25 and Rs. 1·50 and in one instance where the second class rate touches Rs. 4·00, the rate proposed for third class land reaches Rs. 1·75. With these exceptions the fractions are applied to the value of the net produce as calculated for each soil class in each tract.

(b) *Assessment Fraction by Tracts.*—The settlement officer has not applied his assessment fraction to the total outturn of each tract. This is not ordinarily done, but it is a useful check. The figures have therefore been calculated and are

given in Statement C below, which summarises by tracts the proposals for assessment as compared with the accepted standards. From this table it appears that in certain tracts taking them as a whole the assessment proposed approaches or even exceeds (Nos. 20, 22 and 26) the quarter of the net produce which is the provisional standard for assessment. In other tracts the proposed assessment represents a much higher fraction than the share nominally taken; thus in Tract No. 18 although the nominal share is 19 per cent. the actual fraction is 23.35 per cent. These anomalies are due, partly to departures from the nominal fraction on lands in the first and second class, and partly to the general assessment of third class lands at a rate above that deduced from the net produce. These instances have been considered in the analysis of assessment proposals by tracts.

(c) *Distribution by Tracts.*—Great pains have been expended to ensure an equitable distribution of the revenue among the Primary Tracts. Most of these fall into a few large groups. Tracts Nos. 8 to 11 form one group of gradual transition from the sterile western border to the fertile plains of Tract No. 12, Nos. 14 to 17 form another group, Nos. 20 to 22 another group, the classification, outturns and prices have been compared group by group and tract by tract. The settlement officer claims the equitable re-distribution of the demand as the chief justification of his settlement.

(d) *The Criterion of Land Values.*—Although he made little conscious use of land values in framing his proposals it will appear from the following table that in a very large degree they corroborate his claim.

STATEMENT B—Table comparing Land Values and Incidence per acre

Tract	8	9	10	11	12	13	14	15	16	17	18	
Sale value ...	13	29	51	83	126	89	123	101	49	30	64	
Mortgage value ..	7	14	25	43	57	40	63	45	28	18	34	
Incidence per acre fully assessed.	Current ..	1.66	2.06	2.66	3.24	4.71	3.8	3.85	3.5	2.5	2.3	4.48
	Proposed .	1.75	2.19	2.88	3.66	5.13	4.4	4.73	3.8	2.4	1.9	3.11
	Revised ...	1.74	2.19	2.88	3.88	5.34	4.4	4.87	3.8	2.4	1.9	3.11

Tract	19	20	21	22	23	24	25	26	27	28	29	
Sale value ...	102	54	91	103	112	76	45	24	7	57	44	
Mortgage value ...	48	38	53	73	56	56	20	11	...	36	24	
Incidence per acre fully assessed.	Current ..	4.6	2.6	3.07	2.8	4.92	2.32	2.05	2.05	...	2.00	2.00
	Proposed ...	4.1	2.4	3.19	2.9	4.25	2.78	2.17	1.89	...	2.92	2.10
	Revised ...	4.26	2.66	3.42	3.04	4.48	2.78	2.17	1.89	...	2.92	2.10

(The last line in the above table shows the incidence at the rates proposed by the Committee in the analysis of proposals by tracts.)

(e) *Rental value.*—As remarked above the settlement officer has disregarded rental values in framing his proposals. But the large rented area renders it possible to make some use of rental values. If the figure for the fully assessed area be multiplied by that showing the average rental of the tract the result shows the gross rental value of the tract. Where economic rents obtain the value to be taken by Government is ordinarily one half and the rates have to be checked against this share of the rental value. The balance of the gross produce after paying the rent must ordinarily suffice for the tenant to cultivate the land and live on. The net produce represents the balance of the gross produce left after deducting a conventional figure which as it represents only the actual cash expenditure must be less than the cost of cultivation. The net produce should therefore exceed the rent by the cost of living and a little more. But analysis of these proposals shown in some cases an insignificant margin and even in two cases a defect. This is illustrated in Statement C. It would appear then that in some tracts the net produce has been underestimated.

The rental value as thus calculated is also useful in indicating the fraction of the net produce that may be taken. The rents as recorded may include wages of supervision, insurance against risk, or may exceed the economic pitch, but ordinarily an assessment representing 30 per cent of the recorded rental cannot be excessive.

(f) *Summary*—We are unable therefore to recommend that in all cases the settlement officer's proposals be accepted as they stand firstly because it is necessary to look at the total outturn of the holding including all three classes and the fact that less may be spent on poorer land does not justify disregard of the net produce standard for third class land; (the settlement officer wishes to explain here that although the figure for cost of cultivation is based on statistics relating to all three classes it cannot be applied to third class land as the true net produce for this class is still an unknown quantity), secondly because some estimates for the outturn appear too low; and thirdly because sufficient attention has not been paid to rental values. Our detailed recommendations are given in the analysis of the proposals by tracts and the general effect summarised in Statement D.

9. For the reasons given in the detailed analysis of the proposals for assessment in Tract 27 the Committee supports the recommendation of the settlement officer to defer the introduction of new rates in that tract until it has been reclassified. Excluding this tract the demand on rice land according to the proposals of the settlement officer amounts to Rs. 15,77,395, giving an enhancement of Rs. 72,354 or 4.81 per cent on the current demand of Rs. 15,05,041. As revised by the Committee the demand on rice land will amount to Rs. 16,15,640, giving an enhancement of Rs. 1,10,599 or 7.35 per cent. The summary by Assessment Tracts is shown in Statement D.

10. (a) *Main Kind rates.*—As mentioned above two Main Kinds of cultivation have been recognized for land not under rice; Orchard Land denoted by the symbol H, and Vegetable Gardens denoted by the symbol Y. The former are perennial, the latter require annual cultivation. Both main kinds include miscellaneous plots of minute area, but areas sufficient to recognize have been allotted to H or Y according as they were more or less profitable. The present rates on garden land are Rs. 3 and Rs. 2.5 and on miscellaneous land Rs. 2.5 and Rs. 2. Mr. Grantham proposes Rs. 3.5 as the rate for Main Kind H and Rs. 2.5 as the rate for Main Kind Y. These are suitable and may be accepted.

Under the expiring settlement the area of the corresponding classes (G and M) was 19,230 acres and the revenue Rs. 52,541. The effect of the present proposals will be a demand of Rs. 56,526 from the area of 17,914 acres covered by these two Main Kinds. (The inclusion of Tract 27 would add 94 acres to the area and Rs. 256 to the demand.)

(b) *Crop rates.* (i) *Betel.*—At present the normal rate on plots of betel vine is Rs. 10 per acre; but the smallest plot is assumed to measure one-tenth of an acre. The settlement officer proposes a crop rate of Rs. 7 per acre in addition to the

soil class rate provided that no additional crop rate shall be assessed if the total area cultivated by one assessee in one kwin be less than '07 acre. This sounds complicated, but we agree with the settlement officer that in practice it would be simple.

The present revenue from betel is Rs. 885 and the estimated revenue under the system proposed is Rs. 550. The loss is not serious and betel plots on so small a scale are not worked for profit. For the 8 betel gardens in Tracts 28 and 29 a rate of Rs. 4 in addition to the crop rate is proposed. We do not consider it necessary to frame a special rate for these few cases. With this exception we recommend that the proposals be accepted.

(ii) *Dhani*.—The present rate on dhani is Rs. 5 per acre except in Tracts 28 and 29 where it is Rs. 2. These two tracts are being newly brought under cultivation, cheap dhani is essential for decent housing. The settlement officer proposes for these two tracts a rate of Rs. 3 for 5 years and then a rate of Rs. 4 for the remainder of the settlement, elsewhere he proposes to continue the present rate.

His proposals give an increase of Rs. 379 now and another increase of a similar amount in the 6th year of the settlement. We recommend that they be accepted.

(iii) We agree that solitary fruit trees need not be assessed.

(iv) We agree also that second crops should be exempt after one full assessment in the same year (paragraph 399).

11. The settlement officer proposes that in the five towns, Myaungmya, Wakema, Moulmeingyun, Shwelaung and Kyaikpi and in all villages, lands and trees shall be assessed under the Town and Village Lands Act in accordance with the settlement classification and at the same rates as are imposed under the Land and Revenue Act in the same kwin.

The effect of this proposal in the five towns is to give a revenue of Rs. 7,122 as against the former revenue of Rs. 6,713, an increase of Rs. 409 or 6.1 per cent. As the area of village land is unknown no estimate of the revenue derived from it can be made. The proposals are suitable and may be accepted, the financial effect will be modified according to the rates finally adopted. The Committee has recommended changes in Tracts 8A (Myaungmya), 12 (Moulmeingyun), 14 (Wakema) and 20 (Kyaikpi), but not in 15 (Shwelaung). The financial effect of applying the revised tract-rates to these towns will be to produce a revenue of Rs. 7,275 showing an enhancement of Rs. 153 or 2.1 per cent. over that proposed by the settlement officer.

12. For ameliorating large enhancements of revenue the settlement officer deprecates the application of the method ordinarily adopted, which "resembles a rifle liable to gross errors fired at the wrong target by an unskilful marksman." The defects of this method have been recognized and a remedy devised similar to and partly founded on that in the Report. Intermediate assessments may be substituted for intermediate rates on the lines adopted in Akyab and incorporated in the draft of the new Land Records Manual.

But he further advocates that enhancement should be limited to 33½ per cent. We are unable to support this. The new procedure is still experimental and it is unsound to prejudice its successful application. The area and the number of people that will be affected do not justify the risk of confusion.

13. The settlement officer enquired into applications for special exemption from enhancement on the ground of improvements effected by cultivators but found it unnecessary to grant any certificates of exemption.

14. There are no sub-normal rates of capitation tax and no changes are proposed.

15. The net result of all his proposals excluding Tract 27 is estimated to produce apart from capitation tax a revenue of Rs. 16,57,963, which is Rs. 75,929 or 4.79 per cent. in excess of the current demand of Rs. 15,82,034, giving an incidence of Rs. 3.44 per acre occupied against the current incidence of Rs. 3.30.

The net result of the operations, if the modifications recommended by the Committee are accepted, will be to produce a revenue of Rs. 16,96,361, which is Rs. 1,14,327 or 7.22 per cent. in excess of the current demand of Rs. 15,82,034, giving an incidence of Rs. 3.52 per acre occupied against the current incidence of Rs. 3.30.

The effect of intermediate assessments in temporarily reducing the demand cannot be gauged but will not be of practical importance.

16. For the settlement area in general the settlement officer recommends that the rates be notified to last for 20 years. In Treinkyun kwin No. 1106 the rates cannot be introduced until the 1st July 1921. If the rates in general take effect for 20 years from the 1st July 1920 the rates in that kwin should be notified to last for only 19 years. In Tracts 28 and 29 where conditions are unstable and much land has received lenient treatment because newly cultivated, a duration of 10 years is recommended.

We are of opinion that these recommendations should be accepted.

Kyunpyat-taung kwin No.  $\frac{1106}{1522}$  was transferred from the Ma-ubin District by Notification No. 215 of 21st August 1919. This should be classified by the Deputy Commissioner on the lines adopted in Treinkyun kwin No. 1106, and the rates similarly notified.

17. The proposals for the assessment of land outside the settlement area (paragraph 446) may be accepted. Some of these lands might be classified with Tract 27 if the proposals to reclassify that tract (paragraph 383) be approved.

18. It only remains to consider miscellaneous suggestions and matters brought to notice by the settlement officer. These are numerous and are scattered throughout the Report. They comprise:—

- (a) Memoranda with regard to the notification of rates.
- (b) Suggested instructions for the Land Records staff.
- (c) Miscellaneous suggestions;
- (d) Matters of interest other than definite suggestions.

(a) With regard to the notification of rates the special case of Treinkyun kwin (1106) has already been mentioned; rates should be notified for village lands (paragraphs 42, 213 to 216, 416 to 418), and the index map should be compared with Map III. (The maps have been compared and a list of the discrepancies, which are being reconciled, is submitted separately.)

(b) the instructions to surveyors may conveniently be summarised in the form of a Standing Order for the appropriate Main File in the Land Records Office and all revenue offices. This should prevent their being overlooked (see paragraph 367). The following draft order might be suitable, corrected where necessary as regards suggestions which are not accepted. (References are given to the relevant paragraphs in the Report; these would be omitted from the order when issued.)

*Draft Instructions to Revenue Surveyors.*

1. You must not divide up as separate holdings lands held by one man but separated by a small stream (434).
2. You must not include within holding boundaries land that has never been cultivated, especially if it borders on a stream or is occupied by house sites (42, 434).
3. You must not assess land because it is classified on the map but only if it ought to be assessed (234, 416), e.g., house sites in villages (397), and, where such land falls within a holding, in preparing the register of fields you must show it as fallow [e.g., homesteads (398) or uncultivable, e.g., ponds and ditches (432, 434)].

4 You must assess land exactly as it is classified on the map unless betel or dhani is grown (441), thus chillies (258), thetke (399) or mayin (57, 399) on land classed in Main Kind R must be assessed as R, orchards on land classed in Main Kind Y must be assessed as Y

5. You must assess the rates on betel (404) in addition to the soil class rate, but (a) you must not assess betel unless the assessee cultivates within the same kwin at least .07 acre altogether (406), and (b) you must not give a field number to betel plots (407)

6 You must take care only to assess as betel or dhani land actually growing that crop at the time of assessment (413).

7 You must assess mayin paddy on unclassified land as R-3 (399).

8 In kwins where you may grant fallow rate for rice land you may also grant it for kang (212)

9 If two adjacent cultivators agree in writing to a change of boundary you need not obtain permission from the owner (436).

No 9 requires further consideration in connection with changes proposed in the new Land Records Manual, the remainder are suitable.

The attention of the Superintendent should also be specially directed to the remarks about surveyors' residences (433), the index map (439), main kinds (441) and other matters in paragraphs 431 to 442.

(c) The miscellaneous suggestions deal with the effects of drainage in connection with the acquisition of land for embankments (15), the improvement of fishery records (17), the regulation of fuel cutting (23), the eradication of *Stegomyia* (32), the sale of quinine (34), the provision of house sites, "the most pressing need of the district" (42, 434, 435), postal facilities (44), the improvement of ferries and landing stages (46), the propaganda of co-operation on special lines (82, 199), the protection of tenants (199) and the nomenclature of charges (442).

(d) Other matters of interest noticed comprise the area available for extension (3), the character of the Chinaman (51), the physical and economic environment of pioneer cultivators (55 *et seq*), the development of new land in *kanazo* jungle (29, 30, 101, 255), jute and other agricultural experiments (85), varieties of paddy (89), the water hyacinth (104), field snails (111), cattle insurance (152), grazing grounds (158), the illegal collection of cess (216) The description of agricultural operations (112 to 135) is more complete than any we have seen in Burma Of particular interest to settlement officers are the paragraphs relating to pre-settlement notices, the principles adopted in the collection and compilation of statistics, and the use of agricultural notes (228 to 230) and the appendices.

19 The report is long and some matters might have been treated more succinctly. But pruning would have meant extra labour and the physical strain of conducting without an European Assistant operations so difficult and on so large a scale with the scrupulous care that is manifest on every page of the report could only leave a small reserve. Many passages are not directly relevant to the framing of rates or necessary for passing orders on the proposals, and are of interest to future district officers and at the time of revision rather than now, but the present instructions on the subject require the treatment of such matters together with the proposals for assessment We are of opinion that in many respects Mr Grantham has made a valuable addition to our knowledge of agricultural economy in the delta, and that he is to be congratulated on the success with which he conducted the operations and brought them to a close within the period allotted.

J. S. FURNIVALL,

RANGOON, the 7th June 1920.

Offg. Commissioner of Settlements  
and Land Records, Burma.

## APPENDIX.

## Summary of data for Assessment and Analysis of Proposals by Primary Tracts.

## STATEMENT C.—Comparison of Data for Assessment of Rice-land summarised by Primary Tracts.

Tract.	Value of gross produce.	Area fully assessed.	Cost of cultivation (a) per acre. (b) for whole tract.		Value of net produce.	Rental value (a) per acre. (b) for whole tract.		Proposed demand.	Percentage of proposed demand to		
			(4a)	(4b)		(5a)	(5b)		(8a)	(8b)	(8c)
(1)	(2)	(3)	(4a)	(4b)	(5)	(6a)	(6b)	(7)	(8a)	(8b)	(8c)
	Rs.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
8	3,02,804	15,592	9'5*	1,48,624	1,54,180	3	46,776	27,251	8'99	17'73	58'25
9	6,77,041	29,059	10'5	3,05,120	3,71,921	6	1,74,354	63,367	9'35	17'02	36'34
10	5,88,045	20,088	13	2,61,144	3,26,901	10	2,00,880	57,913	9'84	17'71	28'82
11	2,50,501	7,060	15	1,05,900	1,53,601	13	91,780	25,901	9'98	16'86	28'22
12†	47,29,532	1,06,625	17'5	18,65,938	28,63,594	20	21,32,500	5,49,709	11'62	19'19	25'77
13	2,32,725	5,761	17'5	1,00,818	1,31,908	15	86,415	25,624	11'01	19'42	29'65
14	7,13,700	16,845	13'5	2,27,407	4,80,293	17	2,86,365	79,627	11'15	16'37	27'80
15	17,19,712	48,238	12	5,78,856	11,40,856	15	7,23,570	1,85,297	10'77	16'24	25'33
16	6,95,689	30,427	11	3,34,697	3,60,992	9	2,73,843	72,077	10'36	19'97	26'32
17	1,54,830	8,354	9	75,180	79,653	6	50,124	15,724	10'15	19'74	31'37
18	4,35,408	15,930	14	2,23,020	2,12,388	12	1,91,160	49,589	11'39	23'35	25'94
19	8,68,756	24,830	15'5	3,84,805	4,83,891	17	4,22,110	1,01,223	11'65	20'91	23'98
20	1,74,174	7,096	16	1,13,536	60,938	10	70,660	17,316	9'92	28'42	24'40
21	6,46,024	21,610	16	3,45,760	3,00,264	13	2,80,930	68,934	10'67	22'96	24'54
22	1,27,175	4,643	16	74,288	52,887	12	55,716	13,508	10'62	25'54	24'24
23	6,55,846	17,099	18	3,07,782	3,48,164	19	3,24,881	72,685	11'08	20'88	22'37
24	5,45,789	17,924	16	2,86,784	2,59,005	12	2,15,088	50,132	9'18	19'35	23'30
25	2,74,330	11,898	13	1,54,674	1,19,656	8	95,184	25,800	9'40	21'56	27'10
26	1,16,499	5,789	13	75,257	41,242	0	34,734	10,916	9'37	26'46	31'45
27	28,524	1,664	10	16,640	11,884	6	9,984	2,562	8'98	21'55	25'66
28	2,67,554	8,432	16	1,34,912	1,32,642	12	1,01,184	24,661	9'22	18'59	24'37
29	2,27,055	9,408	13'5	1,27,008	1,00,647	9	84,672	19,750	8'68	19'62	23'32

\* Rs. 10 in 8a.

† This does not include 12 Wx.

The following notes summarise tract by tract the data for assessment and analyse the proposals :—

(a) After noting the fully assessed area as given in Statement 19, the gross produce of the tract as estimated under the expiring settlement is calculated. This is obtained by taking from Statement 19 the area in each soil class according to the tracting and classification of the expiring settlement, and multiplying the figures thus obtained by the figures respectively assumed under that settlement for outturns.

(b) The gross produce according to the proposed classification and assumptions is similarly calculated, and this is converted at the prices assumed for the Tract into the gross value of the produce. The total cost of cultivation is then ascertained by multiplying the area fully assessed by the cost of cultivation per acre; then by deducting the cost of cultivation from the gross value the value of the net produce of the tract is given. The rates proposed for each soil class and the resulting demand are then shown and the demand compared with the value of the gross and net produce and with the current demand.

(c) The proposals are then tested with reference to the change in prices as shown in Maps I and IV and in the pitch of rents. The rental value of the whole tract is also calculated by multiplying the fully assessed area by the rent per acre as given in Statement 16. The proposed enhancement should in theory be proportional to the sum of the changes in these factors.

(d) But other factors intervene. In almost every tract there is a reduction, in many cases a large reduction, in the estimate of the gross produce. This is often and largely due to extensions over inferior land since settlement which pending resettlement have been assessed at rates then sanctioned for better lands. The degree in which the increase of cultivation renders it necessary to reduce the estimate of the gross produce is therefore examined, and where this explanation



appears insufficient the estimate is criticised by reference to the measured and admitted outturns, rental values and other relevant considerations, and recommendations are made accordingly.

*Primary Tract 8*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 15,222 acres and by settlement calculations 15,592

(a) It is built up from 21 kwins of Tract D of 1903-04 for which the yields assumed were 35 and 25 and 56 kwins of Tract E of 1903-04 for which the yields assumed were 30 and 20. The gross produce calculated on the above assumptions would be 365,855 baskets.

(b) The new Primary Tract is divided into three assessment Tracts A, B and C, which are distinguished as regards the price obtained and the cost of cultivation. The outturns now assumed for the three soil classes are respectively 32, 22 and 12 baskets per acre, giving 327,994 baskets as the gross produce of the tract in paddy. The gross value of this at Rs 100 per hundred baskets in Tract A, Rs 95 per hundred baskets in Tract B and Rs 89 per hundred in Tract C is Rs 3,02,804. The cost of cultivation at Rs 10 per acre in A and Rs 9.5 in B and C comes to Rs 1,48,624 and deducting this from the gross value, the resulting net value of the produce is Rs 1,54,180. The rates produced for each soil class are respectively.—in assessment Tract A Rs. 3.50, Rs. 2.00 and Re 1.00, and in assessment Tract B Rs. 3.25, Rs 1.75 and Re 1.00, and in assessment Tract C Rs 3.00, Rs 1.50 and Re .75. At these rates the proposed demand is Rs 27,251, which is 8.99 per cent of the gross produce, and 17.73 per cent of the net produce, giving an enhancement of Rs 1,266 or 4.9 per cent on the current demand of Rs 25,985.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results—

(i) The price assumed at the former settlement was Rs 78 per hundred baskets. The prices now assumed are in Tract A Rs 100, in Tract B Rs 95, and in Tract C Rs 89 per hundred baskets. The gross value on the basis of former prices is Rs. 2,55,796 and at the price now assumed is Rs 3,02,804. Solely considering the rise in prices one would expect an enhancement of about 18 per cent.

(ii) The area occupied by tenants, according to Report Statement 5, is 3,799 acres, constituting only 24 per cent of the area calculated by settlement as fully assessed. Rental figures therefore deserve little consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 2.6 to 4.0 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs 3 per acre, and the rental value Rs 46,778, the proposed demand is 58.25 per cent. of the rental value.

(d) The occupied area has increased during the expiring settlement from 16,206 to 26,550 acres. The gross produce estimated at 3.66 lakhs of paddy on the outturns formerly assumed, is now estimated at 3.28 lakhs and this reduction must probably be attributed to the extensions during the settlement having been classed too high by the revenue surveyors. The outturns assumed tally closely with those indicated by crop measurement and also in their general result agree with the outturns admitted by the cultivators. The figures for land and rental values do not afford much assistance, but so far as they go they suggest that in comparison with other tracts the assessment of this area is high. In particular the large enhancement in Tract A seems unnecessary. The Committee recommends that the rates in 8A be reduced to correspond with those in 8B.

*Primary Tract 9*.—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 28,901 acres and by settlement calculations 29,059

(a) It is built up from five kwins of Tract C of 1903-04 for which the yields assumed were 40 and 30, and 53 kwins of Tract D of 1903-04 for which

the yields assumed were 35 and 25 and three kwins of Tract E of 1903-04 for which the yields assumed were 30 and 20. The gross produce calculated on the above assumptions would be 808,900 baskets.

(b) The new primary tract is divided into two assessment Tracts A and B, which are distinguished as regards the price obtained. The outturns now assumed for the three soil classes are respectively 35, 24 and 14 baskets per acre, giving 702,635 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 100 per hundred baskets in Tract A and Rs. 95 per hundred baskets in Tract B is Rs. 6,77,041. The cost of cultivation at Rs. 10.5 per acre comes to Rs. 3,05,120 and deducting this from the gross value the resulting net value of the produce is Rs. 3,71,921. The rates proposed for each soil class are respectively in assessment Tract A Rs. 3.75, Rs. 2.25 and Rs. 1.25 and in assessment Tract B Rs. 3.50, Rs. 2.00 and Re. 1.00. At these rates the proposed demand is Rs. 63,367, which is 9.35 per cent. of the gross produce, and 17.02 per cent. of the net produce, giving an enhancement of Rs. 3,553 or 6 per cent. on the current demand of Rs. 59,814.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

- (i) The price assumed at the former settlement was Rs. 78. The prices now assumed are in Tract A Rs. 100 and in Tract B Rs. 95. The gross value on the basis of former prices is Rs. 5,48,055 and at the price now assumed is Rs. 6,77,041. Solely considering the rise in prices one would expect an enhancement of about 12 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 11,555 acres, constituting 41 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices has risen during the expiring settlement from 5.4 to 5.7 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 6 and the rental value is therefore Rs. 1,74,354; the proposed demand is 26.34 per cent. of the rental value.

(d) The figures in Statement 1 indicate a reduction in the cultivated area. The reduction in the gross produce to 7.03 lakhs of paddy when calculated on the outturn now assumed from 8.09 lakhs given by the former assumptions must be attributed to a more moderate estimate of the fertility. But the measured outturns support the assumptions and the admitted outturns in some degree confirm their accuracy and although the low pitch of land and rental values suggest as in Tract 8 that by comparison with the remainder of the district the proposed assessments are rather high, the Committee is of opinion that the proposals may be accepted. (Forty-five acres have hitherto been assessed as third class land by the revenue surveyor without any authority, but the area is too small to affect the proposals.)

*Primary Tract 10.*—In the year of settlement the fully assessed area in this tract according to the the Land Records figures was 19,964 acres and by settlement calculations 20,088.

(a) It is built up from 39 kwins of Tract C of 1903-04 for which the yields assumed were 40 and 30 and one kwin of Tract D of 1903-04 for which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 707,770 baskets.

(b) The new primary tract is divided into two assessment Tracts A and B, which are distinguished as regards the price obtained. The outturns now assumed for the three soil classes are respectively 42, 29 and 16 baskets per acre, giving 593,147 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 100 per hundred baskets in Tract A and Rs. 95 per hundred baskets in Tract B is Rs. 5,88,045. The cost of cultivation at Rs. 13 per acre comes to Rs. 2,61,144 and deducting this from the gross value the resulting net value of the produce is Rs. 3,26,901. The rates proposed for each soil class are

respectively :—in assessment Tract A Rs. 4.75, Rs. 2.75 and Rs. 1.25 and in assessment Tract B Rs. 4.50, Rs. 2.50 and Rs. 1.25. At these rates the proposed demand is Rs. 57,913, which is 9.84 per cent. of the gross produce, and 17.71 per cent of the net produce, giving an enhancement of Rs. 2,034 or 3.6 per cent. on the current demand of Rs. 55,879.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results :—

(i) The price assumed at the former settlement was Rs. 78. The prices now assumed are in Tract A Rs. 100 and in Tract B Rs. 95. The gross value on the basis of former prices is Rs. 4,66,554 and at the price now assumed is Rs. 5,88,045. Solely considering the rise in prices one would expect an enhancement of about 25 per cent.

(ii) The area occupied by tenants, according to Report Statement 5, is 12,167 acres, constituting 61 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices has risen during the expiring settlement from 6.4 to 9.3 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 10 per acre and the rental value of the tract is Rs. 2,00,880; the proposed demand is 28.82 per cent. of the rental value.

(d) There has been an increase in the occupied area from 17,866 acres to 21,780 and the overclassification of extensions probably contributes largely to the difference between the gross produce estimated in the outturns formerly assumed at 7.07 lakhs of paddy and as the present assumptions at 5.93 lakhs. The outturns now assumed correspond with the results of crop measurement (though for first class land the outturns assumed is two baskets above the figures given by experiment) and they are supported by the admitted yields. The enhancement of revenue is low compared with the rise in rents and prices, but the proposed demand represents a suitable proportion of the net produce and the rental value. We consider that the proposals may be accepted as they stand.

*Primary Tract 11.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 7,009 acres and by settlement calculations 7,060.

(a) It is built up from 7 kwins of Tract C of 1903-04 and 5 kwins of Tract II of 1902-03, for which the yields assumed were 40 and 30. The gross produce calculated on the above assumptions would be 2,64,380 baskets.

(b) The new primary tract is divided into two assessment Tracts M and W, which are distinguished by falling in different townships, Myaungmya and Wakema, and by having different current settlements. The outturns now assumed for the three soil classes are respectively 45, 30 and 16 baskets per acre, giving 247,144 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 105 per hundred baskets is Rs. 2,59,501. The cost of cultivation at Rs. 15 per acre comes to Rs. 1,05,900 and deducting this from the gross value the resulting net value of the produce is Rs. 1,53,601. The rates proposed for each soil class are respectively, in assessment Tract M Rs. 5.25, Rs. 2.75 and Rs. 1.25; and in assessment Tract W Rs. 5.50, Rs. 2.75 and Rs. 1.25. At these rates the proposed demand is Rs. 25,901, which is 9.98 per cent. of the gross produce, and 16.86 per cent. of the net produce, giving an enhancement of Rs. 3,007 or 13 per cent. on the current demand of Rs. 22,894.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results :—

(i) The prices assumed at the former settlement were in Tract C Rs. 78 and in Tract II Rs. 72 per 100 baskets. The price now assumed is Rs. 105. The gross value on the basis of former prices is Rs. 1,76,782 and at the price now assumed is Rs. 2,59,501. Solely considering the rise in prices one would expect an enhancement of about 50 per cent.

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- (ii) The area occupied by tenants, according to Report Statement 5, is 5,435 acres, constituting 78 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 7.4 to 12.2 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 13 and the rental value of the tract is Rs. 91,780; the proposed demand is 28.22 per cent. of the rental value.

(d) There has been a considerable increase in the occupied area during the expiring settlement from 5,813 acres to 7,080; but the estimated gross produce on the former assumptions is only 8 per cent. in excess of that now estimated (2.64 lakhs of paddy against 2.47) and the extensions seem therefore to have escaped severe overclassification. We are of opinion that the proposed enhancement is inadequate. The proposed demand is 28.22 per cent. of the rental value, indicating that the enhancement can be in no degree proportional to the rise in prices but also that 16.86 per cent. is too low a share of the net produce. The Committee recommends therefore for both assessment tracts the rates Rs. 5.50, Rs. 3.00 and Rs. 1.50 for the three classes respectively.

*Primary Tract 12.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 106,337 acres and by settlement calculations 106,625.

(a) It is built up from 156 kwins of Tract I of 1902-03 for which the yields assumed were 50 and 40, and 16 kwins of Tract II of 1902-03 for which the yields assumed were 40 and 30. The gross produce calculated on the above assumptions would be 5,083,050 baskets.

(b) The new primary tract is divided into two assessment Tracts M and W, which are distinguished by falling in different townships, Myaungmya and Wakema. The area shown as 12Wx was eventually excluded from the tract and is dealt with separately below after Primary Tract 15. The outturns now assumed for the three soil classes are respectively 51, 36 and 20 baskets per acre, giving 4,420,124 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 107 per hundred baskets is Rs. 47,29,532. The cost of cultivation at Rs. 17.5 per acre comes to Rs. 18,65,938 and deducting this from the gross value the resulting net value of the produce is Rs. 28,63,594. The rates proposed for each soil class are respectively Rs. 7.0, Rs. 4.0 and Rs. 1.75 per acre. At these rates the proposed demand is Rs. 5,49,709, which is 11.62 per cent. of the gross produce, and 19 per cent. of the net produce, giving an enhancement of Rs. 48,858 or 9.7 per cent. on the current demand of Rs. 5,00,851.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results :—

(i) The prices assumed at the former settlement were in Tract I Rs. 77 and in Tract II Rs. 72 per hundred baskets. The price now assumed is Rs. 107. Solely considering the rise in prices one would expect an enhancement of about 40 per cent.

(ii) The area occupied by tenants, according to Report Statement 5, is 73,098 acres, constituting 67.0 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 11.5 to 17.5 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 21,32,500. Given a rental value of Rs. 21,32,500 the proposed demand is 25.80 per cent. of the rental value.

(d) There has been a considerable increase in the occupied area by about 15 per cent. and the extensions have been assessed on unduly optimistic assumptions. The gross produce of the tract is estimated by the settlement officer at 44 lakhs of paddy against 51 given by the former assumptions. Although,

except for first class soil, he assumes yields far below the figure given by experiment, the admitted normal outturns, (Report Statement 10, columns 7 and 8) corroborate his estimate, which may in our opinion be taken as substantially correct. But he proposes to take only 25·77 of the rental value, which in a fully developed tract seems inadequate and indicates that having regard to the rise in rents and prices the proposed fraction of the net produce is too low and a further enhancement will be more equitable. The Committee recommends rates of Rs. 7·25, Rs. 4·25 and Rs. 1·75 respectively.

*Primary Tract 13.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 5,736 acres and by settlement calculations 5,761.

(a) It is built up from 13 *kwins* of Tract II of 1902-03 for which the yields assumed were 40 and 30. The gross produce calculated on the above assumptions would be 221,550 baskets.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 48, 33 and 18 baskets per acre, giving 221,643 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 105 per hundred baskets is Rs. 2,32,725. The cost of cultivation at Rs. 17·5 per acre comes to Rs. 1,00,818 and deducting this from the gross value the resulting net value of the produce is Rs. 1,31,907. The rates proposed for each soil class are respectively Rs. 6·25, Rs. 3·25 and Rs. 1·50. At these rates the proposed demand is Rs. 25,624, which is 11·01 per cent. of the gross produce, and 19·42 per cent. of the net produce, giving an enhancement of Rs. 4,061 or 18·8 per cent. on the current demand of Rs. 21,563.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

- (i) The price assumed at the former settlement was Rs. 72. The price now assumed is Rs. 105. Solely considering the rise in prices one would expect an enhancement of about 46 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 4,580 acres, constituting 79·5 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 9 to 12·3 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 15 and the rental value is Rs. 86,415; the proposed demand being 30·29 per cent. of the rental value.

(d) The occupied area has risen from 3,558 to 5,839 acres, but although the extensions were overclassified the gross produce as now estimated is practically identical with that estimated on the outturns formerly assumed. The share of the rental value which it is proposed to take indicates however that the proposed assessment is adequate and suitable.

*Primary Tract 14.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 16,870 acres and by settlement calculations 16,845.

(a) It is built up from three *kwins* of Tract B of 1903-04 for which the yields assumed were 45 and 35, 27 *kwins* of Tract W of 1903-04 for which the yields assumed were 50 and 35, 4 *kwins* of Tract X of 1903-04 for which the yields assumed were 45 and 30 and 1 *kwin* of Tract Y of 1903-04 for which the yields were 40 and 25. The gross produce calculated on the above assumptions would be 734,960 baskets.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 50, 34 and 18 baskets per acre, giving 699,706 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 102 per hundred baskets is Rs. 7,13,700. The cost of cultivation at Rs. 13·5 per acre comes to Rs. 2,27,407 and deducting this from the gross value the resulting

net value of the produce is Rs. 4,86,293. The rates proposed for each soil class are respectively Rs. 6'00, Rs. 3'50 and Rs. 1'50. At these rates the proposed demand is Rs. 79,627, which is 11'15 per cent. of the gross produce, and 16'37 per cent. of the net produce, giving an enhancement of Rs. 14,567 or 18'3 per cent. on the current demand of Rs. 65,060.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

- (i) The price assumed at the former settlement was Rs. 82. The price now assumed is Rs. 102. Solely considering the rise in prices one would expect an enhancement of about 25 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 10,065 acres, constituting 60 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 10'5 to 15'1 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 17 per acre and the rental value is Rs. 2,86,365, the proposed demand being 27'80 per cent. of the rental value.

(d) The occupied area is practically unchanged, but the gross produce as now estimated is 6'99 lakhs of paddy against 7'35 lakhs on the former assumptions. This reduction does not set off the rise in prices and the moderate share of the rental value which it is proposed to take indicates that the fraction of the net produce is too low. For first class soil the assumed net value is higher than in Tract 13, but the rate proposed is lower. The Committee recommends that the rate on first class land be raised to Rs. 6'25, leaving the other rates untouched.

*Primary Tract 15.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 47,513 acres and by settlement calculations 48,238.

(a) It is built up from 29 kwins of Tract B of 1903-04 for which the yields assumed were 45 and 35, 14 kwins of Tract W of 1903-04 for which the yields assumed were 50 and 35 and 34 kwins of Tract X of 1903-04 for which the yields assumed were 45 and 30 and 4 kwins of Tract Y of 1903-04 for which the yields assumed were 40 and 25. The gross produce calculated on the above assumptions would be 1,882,770 baskets.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 46, 32 and 16 baskets per acre, giving 1,685,992 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 102 per hundred baskets is Rs. 17,19,712. The cost of cultivation at Rs. 12 per acre comes to Rs. 5,78,856 and deducting this from the gross value the resulting net value of the produce is Rs. 11,40,856. The rates proposed for each soil class are respectively Rs. 5'50, Rs. 3'25 and Rs. 1'25. At these rates the proposed demand is Rs. 1,85,297, which is 10'77 per cent. of the gross produce, and 16'24 per cent. of the net produce, giving an enhancement of Rs. 20,654 or 12'5 per cent. on the current demand of Rs. 1,64,643.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

- (i) The price assumed at the former settlement was Rs. 82. The price now assumed is Rs. 102. Solely considering the rise in prices one would expect an enhancement of about 20 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 22,611 acres, constituting 46'9 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 10'2 to 12'8 baskets per acre. The corrected rent

as calculated by settlement in Report Statement 16 is Rs. 15 and the rental value is Rs. 7,23,570, the proposed demand being 25·33 per cent. of the rental value.

(d) The occupied area has risen during the current settlement by about 12 per cent. from 45,827 to 51,770 acres, and the extensions have been overclassified, so that the gross produce as estimated by the settlement officer is only 18·86 lakhs of paddy as against 18·88 lakhs given by the outturns previously assumed; a decrease of about 12 per cent. The outturns now assumed fall appreciably below the results given by experiment, especially for second class land, where the assumed outturns is 32 baskets per acre against the 41 baskets indicated by crop measurement. But the admitted outturns (Report Statement 1, columns 7 and 8) corroborate the gross produce as calculated by applying the settlement officer's assumptions and his estimate may be accepted as substantially correct. The discrepancy between the rental value given by the Land Records Department and the settlement officer indicates the need for care in adopting the latter as a guide. Land values are high but misleading as they reflect the pressure of population attracted by the fishing industry and the tract suffers even on the best land from irregularity in the water-supply. The Committee therefore recommends that the proposals of the settlement officer be accepted.

*Primary Tract 12Wx.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 4,218 acres and by settlement calculations 4,332.

(a) It is built up from 6 *kwins* of Tract X of 1903-04 for which the yields assumed were 45 and 30. The gross produce calculated on the above assumptions would be 162,180 baskets of paddy.

(b) The whole is one assessment tract and as regards the price obtained and the cost of cultivation. The outturns now assumed for the three soil classes are respectively 50, 34 and 18 baskets per acre, giving 180,184 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 105 per hundred baskets is Rs. 1,89,193. The cost of cultivation at Rs. 17·5 per acre comes to Rs. 75,810 and deducting this from the gross value the resulting net value of the produce is Rs. 1,13,383. The rates proposed for each soil class are respectively Rs. 6·00, Rs. 3·50 and Rs. 1·50. At these rates the proposed demand is Rs. 20,391, which is 10·77 per cent. of the gross produce, and 17·98 per cent. of the net produce, giving an enhancement of Rs. 6,282 or 44·5 per cent. on the current demand of Rs. 14,109.

(c) The proposed assessment is lenient and the settlement officer considered, as the number of the tract indicates, whether it should not be included with the more heavily assessed tract No. 12. But the enhancement is severe and we suggest that instead of amalgamation with Tract 14 it might be included more conveniently in Tract 15 with which it is geographically continuous.

*Primary Tract 16.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 29,359 acres and by settlement calculations 30,427.

(a) It is built up from 26 *kwins* of Tract X of 1903-04 for which the yields assumed were 45 and 30 and 52 *kwins* of Tract Y of 1903-04 for which the yields assumed were 40 and 25. The gross produce calculated on the above assumptions would be 875,960 baskets.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 42, 28 and 14 baskets per acre, giving 717,206 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 97 per hundred baskets is Rs. 6,95,689. The cost of cultivation at Rs. 11 per acre comes to Rs. 3,34,697 and deducting this from the gross value the resulting net value of the produce is Rs. 3,60,992. The rates proposed for each soil class are respectively Rs. 5·00, Rs. 2·50 and Rs. 1·25. At these rates the proposed demand is Rs. 72,077, which is 10·36 per cent. of the gross produce, and 19·97 per cent. of the net produce, giving a reduction of Rs. 1,101 or 1·5 per cent. on the current demand of Rs. 73,178.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results :—

- (i) The price assumed at the former settlement was Rs. 82. The price now assumed is Rs. 97. Solely considering the rise in prices one would expect an enhancement of about 19 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 12,853 acres, constituting 43 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices has remained stationary during the expiring settlement at about 8 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 9, and the rental value is Rs. 2,73,843, the proposed demand being 26.32 per cent. of the rental value.

(d) There has been a large increase in the occupied area by 40 per cent. from 24,614 acres to 34,752, and the extensions have been too highly classed, while there has been actual deterioration due to flooding. Thus the estimated gross produce of the tract is now 7.17 lakhs of paddy against 8.76 lakhs on the assumed outturns of the former settlement. The outturns assumed are low compared with those given by experiment, but they are supported by the admitted outturns and the present estimate for the gross produce of the tract may be accepted as correct. If so, as the cost of cultivation may be accepted, the estimate of the net produce seems correct. But the proposed demand represents 19.97 per cent. of the net produce, a higher proportion than it is proposed to take in any tract from No. 8 to No. 17; (in the remaining tracts the figures are not strictly comparable). The settlement officer purports to take only 16 per cent., but this proportion is exceeded partly because he takes 16.66 per cent. on first class soil and chiefly because of the large area of third class soil which is not assessed on a fractional system. The demand compared with that in other tracts seems high, but after careful consideration with the assistance of the settlement officer the Committee does not regard it as excessive.

*Primary Tract 17.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 7,992 acres and by settlement calculations 8,354.

(a) It is built up from 8 kwins of Tract X of 1903-04 for which the yields assumed were 45 and 30 and 41 kwins of Tract Y of 1903-04 for which the yields assumed were 40 and 25. It also includes a kwin transferred from Ma-ubin District (paragraph 429). The gross produce calculated on the above assumptions would be 221,185 baskets of paddy.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 38, 26 and 14 baskets per acre, giving 159,628 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 97 per hundred baskets is Rs. 1,54,839. The cost of cultivation at Rs. 9 per acre comes to Rs. 75,186 and deducting this from the gross value the resulting net value of the produce is Rs. 79,653. The rates proposed for each soil class are respectively Rs. 4.50, Rs. 2.50 and Rs. 1.25. At these rates the proposed demand is Rs. 15,724, which is 10.15 per cent. of the gross produce, and 19.74 per cent. of the net produce, giving a reduction of Rs. 2,522 or 14.7 per cent. on the current demand of Rs. 18,246.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results :—

- (i) The price assumed at the former settlement was Rs. 82. The price now assumed is Rs. 97. Solely considering the rise in prices one would expect an enhancement of about 20 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 2,687 acres, constituting 32 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce,



independently of prices, has fallen during the expiring settlement from 9·7 to 4·6 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 6 and the rental value at this rate is Rs. 50,124; the proposed demand being 31·37 per cent. of the rental value.

(d) There has been a large increase in the occupied area from 8,591 to 12,255 acres, the extensions have been overclassified and the tract has deteriorated by flooding. The present estimate of the gross produce shows a large reduction to 1·59 lakhs of paddy from 2·21 lakhs on the former assumptions, more than discounting the rise in prices. The assumed outturns on which the estimate of the gross produce is based fall considerably below those given by experiment, especially as regards second class land, where the difference is 11 baskets per acre. There is a similar difference on third class land, but this may be disregarded. Comparison with the admitted outturns suggests that the assumed outturns are rather low, and consequently both the given and net produce underestimated, so that the proposed demand would represent less than 19·74 per cent. of the net produce, and no reduction be necessary on this account. And although the comparatively high proportion of the calculated rental value which it is proposed to take might be considered sufficient ground for reduction, especially in view of the importance of fisheries, we are of opinion that the settlement officer's proposals may be accepted.

*Primary Tract 18.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 15,260 acres and by settlement calculations 15,930.

(a) It is built up from 28 kwins of Tract I of 1902-03 for which the yields assumed were 50 and 40. The gross produce calculated on the above assumptions would be 710,110 baskets.

(b) The new primary tract is all one assessment tract. The outturns now assumed for the three soil classes are respectively 45, 30 and 15 baskets per acre, giving 448,875 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 97 per hundred baskets is Rs. 4,35,408. The cost of cultivation at Rs. 14 per acre comes to Rs. 2,23,020 and deducting this from the gross value the resulting net value of the produce is Rs. 212,388. The rates proposed for each soil class are respectively Rs. 5·75, Rs. 3·25 and Rs. 1·25. At these rates the proposed demand is Rs. 49,589, which is 11·39 per cent. of the gross produce, and 23·35 per cent. of the net produce, giving a reduction of Rs. 18,855 or 27·5 per cent. on the current demand of Rs. 68,444.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

(i) The price assumed at the former settlement was Rs. 77. The price now assumed is Rs. 97. Solely considering the rise in prices one would expect an enhancement of about 25 per cent.

(ii) The area occupied by tenants, according to Report Statement 5, is 10,037 acres, constituting 63·1 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 8·4 to 11·7 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 12 and the rental value is Rs. 1,91,160, the proposed demand being 25·94 per cent. of the rental value.

(d) During the current settlement there has been an increase in the occupied area from 14,176 acres to 16,734 (the increase measures 4,852 acres according to the figures on page 185), but the overclassification of extensions does not wholly account for the large reduction in the gross produce according to former and present assumptions. According to the outturns now assumed the gross produce is only 4·49 lakhs of paddy against 7·10 lakhs on the former assumptions. This reduction is attributed to the erroneous inclusion of these kwins in Tract I of

the last settlement. The assumed outturns are very markedly below the results given by experiment and the admitted outturns also suggest that the assumptions are too low; but the pitch of rent has been stationary since 1907-08 and land values, as shown in Statement B, are very low. After full discussion of all the circumstances with the settlement officer the Committee is unable to regard the proposed reduction as excessive and recommends that the proposals be accepted.

*Primary Tract 19.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 25,131 acres and by settlement calculations 24,830.

(a) It is built up from 39 kwins of Tract I of 1902-03 for which the yields assumed were 50 and 40. The gross produce calculated on the above assumptions would be 1,201,630 baskets of paddy.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 50, 34 and 18 baskets per acre, giving 877,532 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 99 per hundred baskets is Rs. 8,68,756. The cost of cultivation at Rs. 15.5 per acre comes to Rs. 3,84,865 and deducting this from the gross value the resulting net value of the produce is Rs. 4,83,891. The rates proposed for each soil class are respectively Rs. 6.50, Rs. 3.75 and Rs. 1.50. At these rates the proposed demand is Rs. 1,01,223 which is 11.85 per cent. of the gross produce, and 20.91 per cent. of the net produce, giving a reduction of Rs. 16,212 or 13.8 per cent. on the current demand of Rs. 1,17,435.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

(i) The price assumed at the former settlement was Rs. 77. The price now assumed is Rs. 99. Solely considering the rise in prices one would expect an enhancement of about 28 per cent.

(ii) The area occupied by tenants, according to Report Statement 5, is 16,175 acres, constituting 65.2 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 11.0 to 16.7 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 17 and the rental value is Rs. 4,22,110; the proposed demand is 23.98 per cent. of the rental value.

(d) During the current settlement the occupied area has risen from 23,966 acres to 25,339, but overclassification of the comparatively small area of extensions does not account for a reduction in the estimated gross produce from 12.01 lakhs of paddy to 8.77 lakhs given by the outturns now assumed. Part of the reduction is due to deterioration by increased flooding, but most of it is attributed to severe classification at the former settlement. But the outturns now assumed for second class land is 13 baskets below that given by experiment and although the tendency of clerks to select fields near the first class border (paragraph 289) must be admitted and weight given to the considerations educed in paragraph 293 the admitted outturns indicate that the assumptions are unnecessarily cautious. The figure given for the admitted normal outturn is nearly 15 per cent. above that assumed and in no year did the admitted outturn fall so low as that assumed. The high and steadily increasing pitch of rents confirms the opinion that the assumptions are too low. The Committee recommends therefore that the second class rate be enhanced to Rs. 4.00 and the third class conformably to Rs. 1.75.

*Primary Tract 20.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 7,347 acres and by settlement calculations 7,096.

(a) It is built up from two kwins of Tract B III of 1905-06 for which the yields assumed were 45 and 35 and five kwins of Tract C II of 1905-06 and one kwin of Tract C III of 1905-06 for both of which the yields assumed were 40 and

30 and six kwins of Tract D II of 1905-06 and seven kwins of Tract D III of 1905-06 for both of which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 233,085 baskets of paddy.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 42, 28 and 15 baskets per acre, giving 179,870 baskets as the gross produce of the tract in paddy. The gross value of this at Rs 97 per hundred baskets is Rs. 1,74,474. The cost of cultivation at Rs. 16 per acre comes to Rs 1,13,536 and deducting this from the gross value the resulting net value of the produce is Rs 60,938. The rates proposed for each soil class are respectively Rs. 5 00, Rs. 2 50 and Rs 1 25. At these rates the proposed demand is Rs. 17,316 which is 9.92 per cent of the gross produce, and 28.42 per cent. of the net produce, giving a reduction of Rs. 2,124 or 10.9 per cent. on the current demand of Rs 19,440.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results —

- (i) The prices assumed at the former settlement were in tract II Rs 89.5 and in tract III Rs. 85. The price now assumed is Rs 97. Solely considering the rise in prices one would expect an enhancement of about 9 or 10 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 4,948 acres, constituting 69.7 per cent of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce independently of prices, has risen during the expiring settlement from 6.7 to 11.2 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 10 per acre and the rental value is Rs 70,960, the proposed demand respectively 24.4 per cent of the rental value.

(d) The occupied area has risen from 7,342 acres to 9,684 and the high classification of extensions together with deterioration from flooding are held to account for the decrease in the gross produce, 2.33 lakhs of paddy on the former assumptions and 1.80 lakhs on the whole outturns now assumed. But the yield assumed for second class soil is 11 baskets below the figure given by experiment and the admitted outturns also indicate that the present assumptions are too low. The yield assumed for second class is low also compared with that assumed at the former settlement although as the settlement officer points out the general average was lower then because the second was the lowest class. The low proportion of the rental value which the proposed demand represents is a further indication that the net produce value has been underestimated and we consider that the proposed demand must be well below the 28.42 per cent of the net produce which it purports to represent. The Committee recommends that the rate on second class land should be raised to Rs. 2 75 and the third class rate conformably to Rs 1 50.

*Primary Tract 21.*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 21,710 acres and by settlement calculations 21,610.

(a) It is built up from 2 kwins of Tract BII of 1905-06 and 1 kwin of Tract BIII of 1905-06 for both of which the yields assumed were 45 and 35, 20 kwins of Tract CII of 1905-06 and 4 kwins of Tract CIII of 1905-06 for both of which the yields assumed were 40 and 30 and 3 kwins of Tract DII of 1905-06 and 3 kwins of Tract DIII of 1905-06 for both of which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 770,600.

(b) The new primary tract is divided into two assessment Tracts A and B, which are distinguished as regards the price obtained. The outturns now assumed for the three soil classes are respectively 46, 32 and 18 baskets per acre, giving 6,52,628 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 102 per hundred baskets in Tract A and Rs. 97 per hundred baskets in Tract B

is Rs. 6,46,024. The cost of cultivation at P s. 16 per acre comes to Rs. 3,45,760 and deducting this from the gross value the resulting net value of the produce is Rs. 3,00,264. The rates proposed for each soil class are respectively in assessment Tract A, Rs. 6.25, Rs. 3.50, Rs. 1.50 and in assessment Tract B, Rs. 5.75, Rs. 3.00 and Rs. 1.50. At these rates the proposed demand is Rs. 68,934, which is 10.67 per cent. of the gross produce, and 22.96 per cent. of the net produce, giving an enhancement of Rs. 2,584 or 3.76 per cent. on the current demand of Rs. 66,350.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

- (i) The prices assumed at the former settlement were in Tract II, Rs. 89.5 and in Tract III Rs. 85. The prices now assumed are in Tract A, Rs. 102 and in Tract B Rs. 97. Solely considering the rise in prices one would expect an enhancement of about 10 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 10,690 acres, constituting 48 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices has risen during the expiring settlement from 8.3 to 13.5 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 1.3 per acre and the rental value is Rs. 2,80,930, the proposed demand being 24.54 per cent. of the rental value.

(d) The occupied area has risen by 16 per cent. under the expiring settlement from 20,270 acres to 23,431, but the decrease in the estimated gross produce from 7.70 lakhs on the former assumptions to 6.53 lakhs on the outturns now assumed is ascribed previously to the formation of sandbanks and flooding. The assumed outturns differ widely from those indicated by experiment; that assumed for first class soil is 6 baskets higher than the average of three years' experiments with nearly 30 experiments in each year, the assumption for second class soil is 6 baskets below the experimental result. The admitted outturns show that the assumptions are moderate and this is also indicated by the low proportion of the rental value to be taken in the face of rents that have steadily risen to a rather high pitch. But the estimated net value is probably suitable and if so the proportion which it is proposed to take is rather high. The proposals hardly require modification. But not only is a higher price assumed in Tract A, it is also proposed to take a higher proportion of the net value in that tract, 23.53 per cent. as against 22.50 in B. The Committee recommends that the first class rate in Tract B be raised to Rs. 6.00.

*Primary Tract 22*—In the year of settlement the fully assessed area in this tract according to the Land Records figures was 4,653 acres and by settlement calculations 4,643.—

(a) It is built up from 2 kwins of Tract CII of 1905-06 and 2 kwins of Tract CIII of 1905-06 for both of which the yields assumed were 40 and 30 and 1 kwin of Tract DIII of 1905-06 for which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 164,695 baskets of paddy.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 42, 30 and 16 baskets per acre, giving 133,868 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 95 per hundred baskets is Rs. 1,27,175. The cost of cultivation at Rs. 16 per acre comes to Rs. 74,288 and deducting this from the gross value the resulting net value of the produce is Rs. 52,887. The rates proposed for each soil class are respectively Rs. 5.00, Rs. 2.75 and Rs. 1.50. At these rates the proposed demand is Rs. 13,508, which is 10.62 per cent. of the gross produce, and 25.54 per cent. of the net, giving an enhancement of Rs. 257 or 1.9 per cent. on the current demand of Rs. 13,251.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

- (i) The prices assumed at the former settlement were in Tract II Rs. 89.5 and in Tract III Rs. 85. The price now assumed is Rs. 95. Solely considering the rise in prices one would expect an enhancement of about 6 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 3,270 acres, constituting 70 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 7.5 to 12.8 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 12 per acre giving a rental value of Rs. 55,716; the proposed demand is 24.24 per cent. of the rental value.

(d) The occupied area has remained practically stationary during the expiring settlement. The tract seems to have suffered less from flooding than 20 and 21, the others of the same group. The outturn assumed for first class land is 6 baskets above and that for second class land 5 baskets below the figures given by experiment, the assumption for first class land being justified by reference to Tract 20. The admitted outturns suggest that the assumptions as a whole are moderate and this is also indicated by the proportion of the rental value which the demand represents. It is doubtful whether the reduction of the gross outturn from 1.65 lakhs of paddy on the former assumptions to 1.34 lakhs as calculated on the outturns now assumed is wholly justified. We are of opinion that the proposed demand does not really represent 25.54 per cent. of the net value, and consider that in view of the rise in rents and prices a larger enhancement might be taken than is proposed. The yield for second class land given by experiment, 35 baskets, would amply justify a rate of Rs. 3.00, and the Committee recommends that the rate on second class soil be raised to Rs. 3.

*Primary Tract 23.*—In the year of settlement the fully assessed area was 17,099 acres.

(a) It is built up from 29 kwins of Tract I of 1902-03 for which the yields assumed were 50 and 40. The gross produce calculated on the above assumptions would be 845,759.

(b) The new primary tract is divided into two assessment Tracts L and M, which are distinguished by falling in different townships, Labutta and Maulmengyun. The outturns now assumed for the three soil classes are respectively 48, 33 and 16 baskets per acre, giving 642,987 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 102 per hundred baskets is Rs. 6,55,846. The cost of cultivation at Rs. 18 per acre comes to Rs. 3,07,782 and deducting this from the gross value the resulting net value of the produce is Rs. 3,48,064. The rates proposed for each soil class are respectively Rs. 6.25, Rs. 3.25 and Rs. 1.50. At these rates the proposed demand is Rs. 72,685, which is 11.08 per cent. of the gross produce, and 20.88 per cent. of the net produce, giving a reduction of Rs. 11,430 or 13.6 per cent. on the current demand of Rs. 84,115.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results:—

- (i) The price assumed at the former settlement was Rs. 77. The price now assumed is Rs. 102. Solely considering the rise in prices one would expect an enhancement of about 33 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 11,014 acres, constituting 65 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 10.6 to 17.7 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 19 per acre, giving a rental value of Rs. 3,24,881; the proposed demand is 22.37 per cent. of the rental value.

(d) The occupied area has risen by nearly 100 per cent from 8,999 acres to 17,229. The original classification was severe and the settlement officer justifiably calls attention to the small proportion of second class land in country where *kanazo* jungle was being cleared, the original severity has been aggravated in the classification of extensions by surveyors. It is not surprising therefore that the estimated gross produce shows a large reduction. But the outturns assumed fall greatly below the figures given by experiment and although very cautious estimates are necessary when using as a basis for assessment experiments of which a very large proportion must represent the outturn of new land in the height of its natural fertility the admitted outturns suggest that a more than adequate allowance has been made. The high pitch of rents and the low proportion of the rental value which it is proposed to take strengthen this opinion, the rental value being very nearly equal to the estimated net produce. A comparison of the incidence with sale and mortgage values justifies a heavier assessment than is proposed. The Committee recommends that the rates be Rs. 6.50 for first class land and Rs. 3.50 for second class land.

*Primary Tract 24*—In the year of settlement the fully assessed area in this tract was 17,924 acres

(a) It is built up from 5 kwins of Tract II of 1902-03 for which the yields assumed were 40 and 30 and 27 kwins of Tract IV of 1902-03 for which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 558,955 baskets of paddy.

(b) The new primary tract is divided into three assessment tracts A, B and W, which are distinguished by falling in different townships the two former in Labutta and the third in Wakema, and as regards the price obtained. The outturns now assumed for the three soil classes are respectively 44, 30 and 16 baskets per acre, giving 543,376 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 102 per hundred baskets in tract W, Rs. 100 per hundred baskets in tract A and Rs. 97 per hundred in tract B is Rs. 5,45,789. The cost of cultivation at Rs. 16 per acre comes to Rs. 2,86,784 and deducting this from the gross value the resulting net value of the produce is Rs. 2,59,005. The rates proposed for each soil class are respectively in assessment tract W, Rs. 5.00, Rs. 2.50 and Rs. 1.25 and in assessment tract A, Rs. 4.75, Rs. 2.50 and Rs. 1.25 and in assessment tract B, Rs. 4.50, Rs. 2.50 and Rs. 1.25. At these rates the proposed demand is Rs. 50,132, which is 9.18 per cent of the gross produce, and 19.35 per cent of the net produce, giving an enhancement of Rs. 8,295 or 19.8 per cent. on the current demand of Rs. 41,837.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results—

- (i) The prices assumed at the former settlement were in tract II, Rs. 72 and in tract IV, Rs. 67. The prices now assumed are in tract W, Rs. 102 and in tract A, Rs. 100 and in tract B Rs. 97. Solely considering the rise in prices one would expect an enhancement of about 35 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 9,023 acres, constituting 57 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 4.9 to 10.5 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 12 per acre, giving a rental value of Rs. 2,15,088, the proposed demand is 23.30 per cent. of the rental value.

(d) There has been a large increase in the occupied area, but there is little difference between the gross produce calculated on the basis of the outturns formerly assumed and on the assumptions of the settlement officer. The assumed outturns for first and second class land is 4 baskets above the experimental figure for the former, 5 baskets below that for the latter. But the admitted outturns

indicate that the assumptions taken as a whole are moderate and the close approximation of the rental value to the net produce suggests that the moderation is excessive. But in an area being newly opened up to cultivation the proposed assessment appears suitable and the enhancement adequate.

*Primary Tract 25.*—In the year of settlement the fully assessed area in this tract was 11,895 acres.

(a) It is built up from 30 kwins of Tract IV of 1902-03 for which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 344,701 baskets of paddy.

(b) The new primary tract is divided into two assessment tracts B and C, which are distinguished as regards the price obtained. The outturns now assumed for the three soil classes are respectively 40, 28, and 15 baskets per acre, giving 280,623 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 97 per hundred baskets in tract B and Rs. 92 per hundred baskets in tract C is Rs. 2,74,330. The cost of cultivation at Rs. 13 per acre comes to Rs. 1,54,674 and deducting this from the gross value the resulting net value of the produce is Rs. 1,19,656. The rates proposed for each soil class are respectively in assessment tract B, Rs. 4.25, Rs. 2.50 and Rs. 1.25 and in assessment tract C, Rs. 4.00, Rs. 2.25 and Rs. 1.25. At these rates the proposed demand is Rs. 25,800, which is 9.40 per cent of the gross produce, and 21.56 per cent of the net produce, giving an enhancement of Rs. 1,415 or 5.8 per cent. on the current demand of Rs. 24,385.

(c) Testing these proposals with reference to the change in prices and the pitch of the rents we find the following results:—

(i) The price assumed at the former settlement was Rs. 67. The prices now assumed are in tract B, Rs. 97 and in tract C, Rs. 92. Solely considering the rise in prices one would expect an enhancement of about 40 per cent.

(ii) The area occupied by tenants, according to Report Statement 5, is 4,037 acres, constituting 35 per cent of the area calculated by settlement as fully assessed. Rental figures therefore deserve consideration. From the same statement it appears that the pitch of rents in produce, independently of prices, has risen during the expiring settlement from 4.4 to 8.2 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 8 per acre, giving a rental value of Rs. 95,184; the proposed demand is 27.10 per cent. of the rental value.

(d) The occupied area has increased from 3,062 acres to 12,256 and there is a considerable reduction in the estimated gross produce from 3.45 lakhs to 2.87 lakhs, which is largely attributable to overclassification of the extensions. The outturn assumed for first class land is just above that indicated by experiment and for second class land the assumption is 5 baskets lower than the experimental result. But the admitted outturns suggest that the assumptions as a whole are moderate and this opinion is confirmed by comparing the rental value with the net produce. The proposed demand represents a somewhat high proportion of the rental value and the proposals may be accepted as they stand.

*Primary Tract 26.*—In the year of settlement the fully assessed area in this tract was 5,789 acres.

(a) It is built up from 29 kwins of Tract IV of 1902-03 for which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 166,015 baskets of paddy.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 36, 25 and 14 baskets per acre, giving 126,630 baskets as the gross produce of the tract in paddy. The gross value of this, at Rs. 92 per hundred baskets is Rs. 1,16,499. The cost of cultivation at Rs. 13 per acre comes to Rs. 75,257 and deducting this from the gross value the resulting net value of the produce is Rs. 41,242. The rates proposed for each

soil class are respectively Rs. 3.50, Rs. 2.00 and Rs. 1.25. \* At these rates the proposed demand is Rs. 10,916, which is 9.37 per cent. of the gross produce, and 26.46 per cent. of the net produce, giving a reduction of Rs. 966 or 8.1 per cent. on the current demand of Rs. 11,882.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results :—

- (i) The price assumed at the former settlement was Rs. 67. The price now assumed is Rs. 92. Solely considering the rise in prices one would expect an enhancement of about 36 per cent.
- (ii) The area occupied by tenants, according to Report Statement 5, is 1,131 acres, constituting 18 per cent. of the area calculated by settlement as fully assessed. Rental figures therefore deserve little consideration. From the same Statement it appears that the pitch of rent in produce, independently of prices, has risen during the expiring settlement from 2.1 to 5.9 baskets per acre. The corrected rent as calculated by settlement in Report Statement 16 is Rs. 6 per acre, giving a rental value of Rs. 34,734; the proposed demand represents 31.45 per cent. of the rental value.

(d) There has been a large increase in the occupied area from 2,807 acres to 7,113 and the reduced estimate of the gross produce, 1.26 lakhs of paddy against 1.66 lakhs given by the former assumptions, is partly attributable to the overclassification of extensions. But the assumed outturn for second class land is 5 baskets below that given by experiment, and the admitted outturns uniformly suggest that the assumption as a whole is moderate. This is also indicated by a comparison between the rental value and the estimated net produce. In view of the rise of prices the reduction appears excessive. But after discussion with the settlement officer the Committee is unable to suggest any changes which would appreciably increase the revenue from this tract without seriously disturbing the balance of assessment, the distribution, between this and adjacent tracts, and recommends that the proposals be accepted.

*Primary Tract 27.*—In the year of settlement the fully assessed area in this tract was 1,664 acres.

(a) It is built up from 13 kwins of Tract 4 of 1902-03 for which the yields assumed were 35 and 25. The gross produce calculated on the above assumptions would be 51,030 baskets.

(b) The new primary tract is divided into four assessment Tracts CM, DM, CL and DL which are distinguished by falling in different townships, Myaungmya (CM and DM), Labutta (CL and DL) and as regards the price obtained. The outturns now assumed for the three soil classes are respectively 34, 24 and 15 baskets per acre, giving 31,639 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 92 per hundred baskets in Tract C and Rs. 87 per hundred baskets in Tract D is Rs. 28,524. The cost of cultivation at Rs. 10 per acre comes to Rs. 16,640 and deducting this from the gross value the resulting net value of the produce is Rs. 11,884. The rates proposed for each soil class are respectively Rs. 3.50, Rs. 2.00, Rs. 1.25 in assessment Tract C and Rs. 3.25, Rs. 1.75 and Rs. 1.00 in D. At these rates the proposed demand is Rs. 2,562, which is 8.13 per cent. of the gross produce, and 21.55 per cent. of the net produce, giving a reduction of Rs. 1,092 or 30 per cent. on the current demand Rs. 3,654.

(c) Testing these proposals with reference to the change in prices and the pitch of rents we find the following results :—

- (i) The price assumed at the former settlement was Rs. 67. The prices now assumed are in Tracts CL and CM Rs. 92 and in Tracts DL and DM Rs. 87 per hundred baskets. Solely considering the rise in prices one would expect an enhancement of about 30 to 40 per cent.
- (ii) The area occupied by tenants is negligible.



(d) There has been a large increase in the occupied area, (100 per cent) and presumably the extension over inferior soils accounts, as usual, for a large part of reduction in the estimated gross produce of the tract. But the assumed outturn falls greatly below that admitted (3·88 against normal 5·67) and the assumed yield for R2 is only 24 baskets as against 30 shown by experiment. Allowing full weight to the need for caution in accepting the results of crop experiment on undeveloped areas and admitting the necessity for a lowest assessment in areas where large capital charges are apt to overwhelm with debt the pioneer cultivator, the proposed demand appears unnecessarily low. But the settlement officer suggests that the settlement of this area be deferred until resurvey has given a satisfactory basis for assessment. This would obviate the loss of revenue which the proposed demand involves and the Committee recommends that in this tract the current rates should be continued pending settlement of the adjacent area.

*Primary Tract 28*—(a) In the year of settlement the fully assessed area in this tract was 8,432 acres which is now coming under settlement for the first time. It has hitherto been assessed at Rs. 2 per acre, apparently by order of the Deputy Commissioner.

(b) The whole is one assessment tract and the outturns assumed for the three soil classes are respectively 41, 28, and 14 baskets per acre, giving 267,554 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 100 per hundred baskets is Rs. 2,67,554. The cost of cultivation at Rs. 16 per acre comes to Rs. 1,34,912 and deducting this from the gross value the resulting net value of the produce is Rs. 1,32,642. The rates proposed for each soil class are respectively Rs. 4·25, Rs. 2·25 and Rs. 1·25. At these rates the proposed demand is Rs. 24,661 which is 9·22 per cent. of the gross produce, and 18·59 per cent. of the net produce, giving an enhancement of Rs. 7,797 or 46·2 per cent. on the current demand of Rs. 16,864.

(c) There is little material for testing these proposals. Over 40 per cent. of the area falls in the second class and for this the outturn assumed is 28 baskets per acre as against 39 given by experiment, but the admitted outturns indicate that those assumed are not unduly low and we are of opinion that the proposals of the settlement officer may be accepted.

*Primary Tract 29*—(a) In the year of settlement the fully assessed area in this tract was 9,408 acres. Like Tract 28 it is now coming under settlement for the first time, and has hitherto been assessed at Rs. 2 per acre.

(b) The whole is one assessment tract. The outturns now assumed for the three soil classes are respectively 38·26 and 14 baskets per acre, giving 2,34,696 baskets as the gross produce of the tract in paddy. The gross value of this at Rs. 97 per hundred baskets is Rs. 2,27,655. The cost of cultivation at Rs. 13·5 per acre comes to Rs. 1,27,008 and deducting this from the gross value the resulting net value of the produce is Rs. 67,647. The rates proposed for each soil class are respectively Rs. 4·0, Rs. 2·0 and Rs. 1·00. At these rates the proposed demand is Rs. 19,750 which is 8·68 per cent. of the gross produce, and 10·14 per cent. of the net produce, giving an enhancement of Rs. 934 or 4·9 per cent. on the current demand of Rs. 18,816.

(c) The rented area is insignificant and there is little material by which the proposals can be tested. But the outturns assumed are far below the figures given by experiment, by 11 baskets in the case of first class land and by 12 baskets for second class land. The rental value also exceeds the estimated net produce, indicating that the estimate is too low. But little or no weight can be attached to rents in such an area; great caution is necessary in gauging by crop measurement the outturn of newly cleared jungle; and the admitted outturns indicate that those assumed are generally appropriate. We consider therefore that the settlement officer's proposals may be accepted.

## STATEMENT D.—Summary of Proposals.

Tract.	Present demand	Proposal of Settlement Officers for						Revision by Committee of					
		Rates			Demand	Enhancement (a) Net (%) Per cent		Rates.			Demand	Enhancement (a) Net (b) Per cent.	
		R 1	R. 2	R. 3		R. 1.	R 2.	R 3	4 ( )	4 (f)			
1	2	3(a)	3(b)	3(c)	3(d)	3(e)	3(f)	4(a)	4(b)	4(c)	4(d)	4(e)	4(f)
8A	1,481	3 50	2 00	1 00	2,007	526	35 5	} 3 25	1 75	1 00	14,514	452	3 2
8B.	12,581	3 25	1 75	1 00	12,688	107	8						
8C	11,923	3 00	1 50	75	12,556	633	5 3	3 00	1 50	75	12,556	633	5 3
9A.	17,812	3 75	2 25	1 25	18,507	695	3 9	3 75	2 25	1 25	18,507	695	3 9
9B	42,002	3 50	2 00	1 00	44,860	2,858	6 8	3 50	2 00	1 00	44,860	2,858	6 8
10A.	47,405	4 75	2 75	1 25	48,648	1,243	2 6	4 75	2 75	1 25	48,648	1,243	2 6
10B	8,474	4 50	2 50	1 25	9,265	791	9 3	4 50	2 50	1 25	9,265	791	9 3
11M	12,530	5 25	2 75	1 25	15,309	2,779	22 2	} 5 50	3 00	1 50	16,358	3,828	30 5
11W	10,364	5 50	2 75	1 25	10,592	228	2 2						
12	5,00,851	7 00	4 00	1 75	5,49,709	48,858	9 7	7 25	4 25	1 75	5,74,554	73,703	14 7
13	21,563	6 25	3 25	1 50	25,624	4,061	18 8	6 25	3 25	1 50	25,624	4,061	18 8
14	65,060	6 00	3 50	1 00	79,627	14,567	22 4	6 25	3 50	1 50	82,026	16,966	26 1
15	1,64,643	5 50	3 25	1 25	1,85,297	20,654	12 5	5 50	3 25	1 25	1,85,297	20,654	12 5
12Wx.	14,109	6 00	3 50	1 50	20,391	6,282	44 5	5 50	1 25	1 25	18,749	4,640	32 9
16	73,178	5 00	2 50	1 25	72,077	-1,101	1 5	5 00	2 50	1 25	72,077	-1,101	1 5
17	18,240	4 50	2 50	1 25	15,724	-2,522	13 8	4 50	2 50	1 25	15,724	-2,522	13 8
18	68,444	5 75	3 25	1 25	49,589	-18,855	27 5	5 75	3 25	1 25	49,589	-18,855	27 5
19	1,17,435	6 50	3 75	1 50	1,01,223	-16,212	13 8	6 50	4 00	1 75	1,05,726	-11,709	9 9
20	19,440	5 00	2 50	1 25	17,316	-2,124	10 9	5 00	2 75	1 50	18,857	-583	3 0
21A.	27,064	6 25	3 50	1 50	28,608	1,544	5 7	6 25	3 50	1 50	28,608	1,544	5 7
21B	39,786	5 75	3 00	1 50	40,326	1,040	2 6	6 00	3 00	1 50	41,024	1,740	4 4
22	13,251	5 00	2 75	1 50	13,508	257	1 9	5 00	3 00	1 50	14,090	839	6 3
23	84,115	6 25	3 25	1 50	72,685	-11,430	13 6	6 50	3 50	1 50	76,685	-7,430	8 8
24A	25,836	4 75	2 50	1 25	34,076	8,240	31 9	4 75	2 50	1 25	34,076	8,240	31 9
24B.	1,550	4 50	2 50	1 25	1,675	125	8 1	4 50	2 50	1 25	1,675	125	8 1
24W.	14,451	5 00	2 50	1 25	14,381	-70	...	5 00	2 50	1 25	14,381	-70	...
25B.	18,074	4 25	2 50	1 25	19,319	1,245	6 9	4 25	2 50	1 25	19,319	1,245	6 9
25C.	6,311	4 00	2 25	1 25	6,481	170	2 7	4 00	2 25	1 25	6,481	170	2 7
26	11,882	3 50	2 00	1 25	10,916	-966	8 1	3 50	2 00	1 25	10,916	-966	8 1
27C.M.	1,903	3 50	2 00	1 25	1,458	-445	23 4	3 50	2 00	1 25	1,458	-445	23 4
27C.L.	347	3 50	2 00	1 25	255	-92	26 5	3 50	2 00	1 25	255	-92	26 5
27D.M.	1,061	3 25	1 75	1 00	680	-381	35 9	3 25	1 75	1 00	680	-381	35 9
27D.L.	343	3 25	1 75	1 00	169	-174	50 7	3 25	1 75	1 00	169	-174	50 7
28	16,864	4 25	2 25	1 25	24,661	7,797	46 2	4 25	2 25	1 25	24,661	7,794	46 2
29	18,816	4 00	2 00	1 00	19,750	934	4 9	4 00	2 00	1 00	19,750	934	4 9
Total ...	15,08,695	...	...	..	15,79,957	71,262	4 72	...	...	...	16,18,202	1,09,507	7 26
Total excluding Tract 27	15,05,041	...	...	...	15,77,395	72,354	4 81	...	...	...	16,15,640	1,10,599	7 35

Note.—The revised proposals of the Committee concerning Rates and Demand are shown in italics.

• • • • • like that mandarin Ching who has ciphered my name

With red, for a tax  
Of a thousand taels

Dear gods ! I deemed him only a paper-tiger when he  
First blustered here ;

• • • • •  
• • • • •  
• • • • •

But there is a way  
To make him lay down

That busy vermilion pencil ; and he must beware :

For the neighbours talk  
In whispers of him

And meanwhile furtively look towards the coffin-shop. Ah !

Who can respect  
Tax-making folk

Who fatten on our misfortunes and squeeze and squeeze

Until the last cash  
Is wrung from us ?

(From the *Momologues of Wu Ting Fang of Tai Yuen,*  
by Rowland Thirlmere.).

# INDEX

## PART I.—DESCRIPTION OF THE AREA OF THE OPERATIONS

### CHAPTER I.—PHYSICAL AND GENERAL CONDITIONS.

	begins from	PAGE
	PARA.	
Introduction	1	1
Occupied areas	2	2
Unoccupied land	3	10.
Configuration of the Settlement area	4	5
Salinity of the rivers	9	5
Tides and Cultivation	11	5
Floods and Bunds	15	8
Fisheries	17	10
General aspect of the country in the rains	19	16
General aspect of the country in the dry season	23	12
Water and Soil	27	13
Forests and Wild Growths	28	14
Forests and Settlement Colonisation	29	14
The Kanazo	30	15
Wild Animals	32	16
Temperature	33	17
Wind	34	16.
Rain	35	16.
Potable Water	36	16
Diseases	38	16.
Famine	40	16
Towns, Markets and Villages	41	16.
Communications	44	16
Retail Prices of Household Requirements	47	16

### CHAPTER II.—THE PEOPLE.

Enumeration	48	16
Race, Religion and Language	49	24
Emigration and Immigration	50	16.
Occupations	51	25
Character of the people	54	26
Method of Enquiry into the Cost of Living	59	29
The Cost of Living	65	31
Extravagance	67	32
Indebtedness	68	33
Security for Loans	74	36
Rates of interest	76	16.
Utilisation of permanent Loans	77	16.
Temporary Loans	79	38
General conditions of Borrowing	80	39
Loans by Government to Cultivators	81	16.
Co-operation	82	40

### CHAPTER III.—AGRICULTURE.

Chief crops	84	16
Kinds of Paddy	86	42
Specific Gravity of Paddy	93	45
Soil and Sub-soil	94	16.
Silt in paddy lands	99	47
Development of paddy land	101	48
Deterioration of Soil	103	50
Character of Seasons	106	51
Weeds	108	53
Damage by Animals and Pests	110	54
Field-snails	111	16.
Methods of Cultivation of Paddy	112	55
Tillage	114	57
Nurseries	118	59
Seed selection	122	60
Transplanting	123	61
After transplanting	125	62
Reaping	126	63
Stubble	127	16.
Collection of sheaves	128	16.
Threshing	129	64

	Begins from PARA.	PAGE.
<b>CHAPTER III -- AGRICULTURE -- <i>concl.</i></b>		
Threshing for seed and special needs	131	64
Winnowing	132	65
Manure	134	<i>ib.</i>
Fallowing	137	65
Disposal of the Paddy Harvest	139	67
The Wholesale Trade	141	68
Sampling and Payment	143	69
Transport from threshing-floor to barges	144	70
Disposal of Crops other than Paddy	145	71
Labour	146	<i>ib.</i>
Cattle	151	73
Oxen <i>versus</i> Buffaloes	153	75
Diseases of Cattle	154	76
Cattle and Mosquitoes	155	<i>ib.</i>
Purchase and hire of cattle	156	77
Lending	157	<i>ib.</i>
Grazing-Grounds	158	78
Domestic Animals other than Cattle	160	79
Measures of land and paddy	161	<i>ib.</i>
Average area worked by one Cultivator	164	80

#### CHAPTER IV.—OCCUPANCY.

Land Tenures	165	81
Areas of Estates	166	<i>ib.</i>
Large Estates	167	82
Area owned by Agriculturists and Non-agriculturists	169	83
Sales of land	174	86
Mortgages of Land	176	87
Areas let to Tenants	178	88
Resident and Non-resident Owners and Landlords and Tenants	179	89
Races of Landlords and Tenants	180	90
Capital of Tenants	182	91
Kinds and conditions of Tenancies	185	92
Rents	192	96
Duration of Tenancies	195	98
Expropriatory Tenants	197	99
Written Tenancy Contracts	198	<i>ib.</i>
Protection for Tenants	199	100
Rental Values as a basis of assessments	200	102

#### CHAPTER V.—THE EXPIRING SETTLEMENT.

Divisions of the area	201	103
Mr. Mathews' Settlement	202	<i>ib.</i>
Mr. MacKenna's Settlement of 1902-03	203	104
Mr. Lowry's Settlement in 1903-04	206	106
Lieutenant-Colonel Ormiston's Settlement of 1905-06	207	<i>ib.</i>
Reference table for current Settlements	208	107
General characteristic of the current Settlements	209	<i>ib.</i>
Assessment of Fallow Lands	210	108
Assessments in Villages	213	109
Assessments in Towns	215	110
District Cess	216	111
Occupied Area and Land and Tree Revenue during expiring Settlement	217	<i>ib.</i>
Capitation-tax	218	<i>ib.</i>
Collection and Revenue	219	<i>ib.</i>
Paddy prices during Expiring Settlement	221	112
Reclassification and Exemptions during the Expiring Settlement	222	<i>ib.</i>
Influence of Expiring Settlement upon Agriculture	223	113

### PART II.—THE NEW SETTLEMENT.

#### CHAPTER VI.—GENERAL.

Grounds for undertaking a new Settlement	224	<i>ib.</i>
Duration, Extent and method of the Operations	225	<i>ib.</i>
Year of Settlement	227	114
Pre-Settlement Notices	228	<i>ib.</i>
Statistical Work	229	<i>ib.</i>
Area Statements and Settlement Maps	231	116
Original Settlement	235	118





## INDEX.

v

### STATEMENTS.

	PAGE.
1. Occupied and other areas at last Settlement and present Settlement . . .	246
2. Land Revenue and Capitation-Tax Demand and Collections since 1902-03 . . .	248
3. Acres under various Crops in the whole Myaungmya District . . .	250
4. Wholesale Harvest Prices of Paddy since 1895 . . .	252
5. Tenancies of Paddy-land . . .	254
6A. Sales of Paddy-land . . .	260
6B. Sales of other than Paddy-land . . .	262
7A. Mortgages of Paddy-land . . .	264
7B. Mortgages of other than Paddy-land . . .	269
8. Rainfall recorded during the last twenty years . . .	268
10. Outturns of Paddy-lands . . .	270
12A. Cost of Replacing Cattle . . .	274
12B. Cost of Cultivation . . .	278
13A. Incomes and Cost of Living of Agriculturists . . .	283
13B. Standard of living . . .	289
14. Retail prices during the Settlement Operations . . .	290
15A. Permanent debts of Agriculturists . . .	298
15B. Temporary Loans . . .	306
16. Rents, Ex-proprietary Tenants and duration of Tenancies . . .	307
17. Sale values of Paddy-land . . .	312
18. Rates of Encumbrance upon Land under Mortgage in Settlement Year . . .	314
19. Present and Proposed Revenue Rates and Demand . . .	318
20. Changes in Classification of Paddy-Land . . .	331
21. Tract of each Kwin under expiring and proposed Settlements . . .	342

### MAPS.

FRONTISPIECE—showing the Settlement Area in relation to the District and Province	
I.—The Expiring Settlements	
II.—The Settlements of 1888—1891. . .	}
III.—The Proposed Assessment-Tracts. . .	
IV.—Prices of Paddy. . .	
	In the pocket at the end of the report.





**REPORT**  
ON THE  
**SETTLEMENT OPERATIONS**  
IN THE  
**MYAUNGMYA DISTRICT**  
SEASON 1916—19.

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**PART I.—DESCRIPTION OF THE AREA OF THE OPERATIONS.**

**CHAPTER I.—PHYSICAL AND GENERAL CONDITIONS.**

*"And hath established it upon the floods."*

1. The Myaungmya District of the Irrawaddy Division of Lower Burma reaches the coast and occupies the centre of the lower part of the delta of the Irrawaddy. The large distributary of that river which retains the name of Irrawaddy to its mouth runs some little way inside the eastern border of the district, and the Pyanmalaw distributary which rivals it in width and excels it in volume branches off at the north-east corner of the district and runs through the middle of the district; the Ngawun, which after branching off near Henzada as the first great distributary, runs by Bassein, forms by the Thetkèthaung branch of its estuarial portion the district's western boundary. The Myaungmya District marches with the Pyapôn District on the east and with the Ma-ubin and Bassein Districts on the north and west. The range of latitude is from  $15^{\circ} 44'$  to  $16^{\circ} 55'$  N. and of longitude from  $94^{\circ} 36'$  to  $95^{\circ} 35'$  E. The area of the district is 2,642 square miles, and its population was 105,000 in 1881, 182,000 in 1891, 283,000 in 1901, and 335,000 in 1911. For administrative purposes the district, which was first constituted out of the old Thongwa District in 1893, is divided into the two subdivisions of Myaungmya and Wakèma. In the former are contained the townships of Myaungmya, Einmè and Labutta and in the latter Wakèma and Mawlamyainggyun. The Einmè Township occupies an area of 287 square miles in the north-west of the district: the whole of this together with the three revenue circles of Myaungmya Township which lie north of the latitude of Myaungmya Town and a strip lying chiefly between the Ywe River and the Thetkèthaung River and occupying parts of Myaungmya and Labutta Townships forms the area of 642 square miles which was settled by Mr. Duffin in 1910-12 as shewn in Map I at the end of this report. Mr. Duffin's area reached the sea only at the end of a narrow peninsula: the remainder of the coast is occupied chiefly by a block of tidal reserved forests which have an area of 460 square miles, but some other parts along the lower reaches of the Pyanmalaw River have been cultivated and were surveyed in 1919 with a view to being settled in the near future. The remainder of the district, comprising roughly the middle horizontal third towards the west and the whole of the Wakèma and Mawlamyainggyun Townships towards the east, is included in the area of 1,218 square miles treated in this report. The small maps shown as the frontispiece of the report indicate the general position of this area in relation to the district and to the province of Burma. The first

paragraph of Chapter V of the report gives some particulars of the current settlements in this area, which are also shown on Map I in the pocket at the end of the volume and described in detail in later sections of Chapter V. In a part of the area there were settlements previous to those shown in Map I, these are also described in Chapter V and are shown in Map II. In a small part of the area of the operations, as Map I indicates, there has been no previous settlement. In the major part of the area of the operations now reported the last previous settlements took place between 1902 and 1904; but a total area of 74 square miles including 37,985 occupied acres was last settled in 1905-06. The operations described in this report began on the 11th November 1916 and were completed on the 21st October 1919.

2. The present settlement operations have dealt with 915 rural *kwins* with an occupied area of 482,138 acres and five towns in 52 blocks with an assessed area of 1,791 acres, thus covering a total area of 483,929 acres. In four of the five towns the survey is on a scale of 64 inches to the mile, in all rural *kwins* and in the remaining town of Kyaikpi the scale is 16 inches to the mile. The assessed area (apart from towns) was about 370,959 acres in 1902-03 and has therefore increased by 111,170 acres or nearly 30 per cent. In Statement 1 at the end of the report particulars of the occupied areas are given for each of the twenty-two primary tracts into which the whole area will be divided in Chapter VII and also for the area as a whole. Where records are available particulars are given for the year of last settlement as well as for the year in which the operations now reported took place in that particular area. Generally, owing to various difficulties in tracing areas of some *kwins* in the early years the figures for those years are only approximate, and little stress should be laid upon them. Rather the abstracts at the bottom of Statement 3 should be consulted, where will be found an account of the growth of the area assessed as paddy, *dhani* orchard or other land in each of four years at intervals according to the registers of the Land Records Department. The greatest increase has taken place in the last of the three intervals, and still further increase may therefore be expected although the area most attractive to pioneers of cultivation appears now to lie outside the settlement area. It may be pointed out in passing that the abstract of Statement 3 also shows the overwhelming importance above all others in the settlement area of the paddy crop. Areas not assessed but occupied free of revenue or set apart for grazing grounds are shown for the year of settlement in Statement 1.

3. The unoccupied land which is still available for occupation is also shown in Statement 1, where an attempt has been made to distinguish different kinds of waste land. Land frankly unculturable or only to be made culturable by an entirely impossible expenditure has been included in item 9 together with areas occupied by rivers or roads. Land which could be cultivated by an individual after the investment in it of a normal amount of capital and labour was classed as A in item 7. Land which could be rendered culturable if large joint schemes of improvement were undertaken or if such embankments were built as could only be undertaken by Government or by large societies has been classed as B. The boundaries of the classes are vague; but it is hoped that, having followed the views of local men in classifying the waste spaces, an approximately true result has been obtained for the area as a whole. Class A includes nearly 62,000 acres and affords room still for half as much extension as has occurred since last settlement. Probably some part of class B will also be taken up in the near future as cultivators are beginning to discuss co-operative societies for the construction of bunds. Practically all the culturable land within the settlement area which has not already been taken up is of inferior quality and will still be such even when embankments are constructed to make it culturable; but in spite of this there will be much land taken up. There is more forest further south beyond the settlement area, but it requires long and expensive preparation to make such land productive and also knowledge of the conditions which obtain in

mangrove jungle; and further there is rarely any local source of water suitable for domestic purposes.

4. Within a radius of two to four miles behind Myaungmya Town there is a considerable proportion of slightly elevated stony land covered with jungle or gardens and miscellaneous vegetables cultivation and forming small ridges and bosses between which are flooded valleys which are cultivated with paddy where possible. Probably the elevation nowhere exceeds even in isolated points fifty or sixty feet above high flood level in the rivers near by, but it is high indeed in relation to the contours of the greater part of the settlement area. From this small area a ridge runs in a south-westerly direction for about ten miles to connect with an elevated dome of jungle which is distinguished in Map III by the blank area in the midst of the proposed Primary Tract 8 and is shown also in the frontispiece map as Dome 1. To the south and separated from this by a narrow valley, and apparently part of the same geological formation, is a larger similar dome, shown as Dome 2 in the frontispiece map, and stretching down to the towns of Kyagan and Labutta near which it is degraded to slightly elevated patches more suitable for gardens and house-sites than the paddy lands around and a few small ridges and plateaux. Apart from these small elevations—which would pass almost unnoticed in most other districts—the high and the low lands are distinguished in level by only a few feet and in many wide stretches the difference is almost a matter of inches. The whole area is essentially deltaic, built up by the various mouths of the Irrawaddy, gotten in fact by Irrawaddy out of Upper Burma; and the level hardly anywhere rises more than a foot or so above the high flood level of the rivers and most of the land is below that level. Level indeed is best regarded in the settlement area not according to height above any fixed datum but in relation to the neighbouring rivers. Regarded in this way the configuration of the settlement area may conveniently be pictured for a first approximation as essentially a plain of paddy cultivation above the reach of neap tides but a few inches below the high level of spring tides.

5. In the greater part of the Mawlamyainggyun Township (typically, Tract 12 shown in Map III) rivers intersecting the country in all directions have built up their banks a little higher than the general level, while the central parts of the islands formed differ a little one way or the other from the low level of the tides. Thus twice a day at about the time of spring tides throughout the rainy season the rivers flood the fields with fresh water. The fields on the high river-banks may or may not receive the water which runs into the lower levels by the small drainage channels. The middle levels, constituting the best paddy-land, are covered to the depth of a foot or so at each high spring tide; but the water drains away at each falling tide to the river leaving only so much as is retained by the *kazins*, and generally no water enters for a few days of neap tides. At a little lower level the drainage is slower, and before the flood of one tide gets out that of the next begins to come in, and even neap tides are felt at places; so that these levels have the typical second-class paddy-lands in which the water is excessive, though it does not wash away or drown the plants and is not so bad as to prevent careful cultivation. Then come still lower levels in which the tidal efflux is either not felt or is just enough to give the plants a short periodical relief from severe flooding every twelve hours. Very little of the land in this part is so badly flooded as to be quite unculturable, though the lowest levels from which the water cannot drain away yield poorly and include the main part of the third-class soils of the tract. The middle well-drained levels are free from nearly all fear of drought or excess of water; they have their water constantly renewed so that there is no stagnation; a stretch of days without rain is of little interest unless it just coincides with the four or five days in which tides do not enter; the tidal water is not as cool as rain but is not so hot as dry soil would be; it is not the solution of oxygen which rain-water is essentially, but it is aerated to some degree by wind on its surface and it carries a body of fertilising silt and does not prevent the fields from receiving rain-water

though it undoubtedly dilutes it. Consequently these middle levels give excellent yields. Various causes lead to defects from their high standard; the excessive supply of water and defective drainage is typical—"the water is heavy," "the drainage is slow" are the constant refrains of the cultivators; but there are cases of too rapid entry and exit disturbing the all-important film of organisms on the surface of the soil and cases of excessive growth of weeds due to the inundations; there are cases of land which in the hot weather receives an inundation of salt-tides; and there are the fields just too high to receive the water on the surface though profiting through their sub-soils. Over a wide stretch covering most of this township and running down towards the south, however, the surface is a plane between high and low tide levels, with unevennesses which are more a roughening than a distortion of the plane, and though striking the attention forcibly on account of the depth of water on them at high tide are so small that without the inundations they would hardly be noticed by anyone but a cultivator. A sheet of rough cardboard with erasures on its surface gives an apt picture of the plane.

6. Towards the south and south-west the level (in relation to tides) appears to fall. This may be due to an absolute fall of level or to the greater strength of tidal action nearer the river's mouth; but to the cultivator it appears as a fall of level and can quite conveniently be regarded as such in this report. Whatever the reason the phenomenon observed is that tides enter the middle levels and even the upper levels in the hot weather when the water is salt and in some parts enter as early as November and besides affecting the crop make harvesting difficult.

7. Towards the west, in Myaungmya Township the configuration is that corresponding to the effect of a similar plane being strained upwards from below in the hilly domes which have been described. The up-thrusting domes have torn through the surface so as to rise abruptly from it, but they have dragged the land up a little to form a shelf which has jagged rising edges round the domes and falls to the general level again in the areas marked as Tracts 9 and 10 in Map III.

8. Towards the north and east the cardboard sheet may be conceived as being strained severely downwards to low-tide level by the corner which represents the North Kyônpauk Circle in the north-east corner of the district. The land along the eastern bank of the Zaletaw River (which forms the western boundary of the wide northern part of Wakema Township) has thus been cockled up to a ridge, and the part near Wakema is a continuation of the Mawlamyainggyun plane. On the comparatively steep slope from these parts down to the east one must conceive of a number of shallow saucers varying from one or two to twelve or fifteen feet in depth, superposed upon the sloping plane. The saucers are shallowest in the west and deeper towards the east, and the rims and some of the centres have been irregularly indented by the potter while the clay was still soft with the pressure of a rough scarred thumb. Between the saucers run the larger rivers; each thumb-mark forms a *kwin* or unit group of holdings in which a narrow rim, built up by the silt of the overflow of the rivers and the smaller channels of the saucers till it is high enough as a rule to be protected from floods by embankments, surrounds and slopes down to a hollow centre which is at least severely flooded and in all the eastern half of the township unculturable, being below low-tide level in the rains though above it and dry in the hot weather. Thus each separate *kwin* forms itself a saucer which may however be broken and generally has a part of its rim missing towards the interior of the large saucer-island of which it forms a part; the cultivated area of each *kwin* corresponds to a coloured band running round the saucer near its rim. This configuration, described for the north and north-east of Wakema, is also found in the greater part of the area east of Kyaikpi belonging to the 1906 settlement, and in parts of the north of Mawlamyainggun Township about Kathko and Kyundeik. The picture of the district drawn here requires local correction in places; but it will give a grasp of the general configuration, which, in conjunction with a comprehension of the rivers and tides, will permit such a general description of the country to be given as will facilitate an apprehension of the conditions of life

and agriculture in the district. Expressed in more complex and genetic fashion the picture would probably have some geological truth; but the simpler static expression suits the present purpose.

9. It is convenient now to trace the principal rivers one at a time beginning from the north-east corner where the main stream of the Irrawaddy, having already thrown off one great arm just above Maubin, divides again to form the

Salinity of Rivers.

(See frontispiece Map.) Shwelaung River flowing west and the Irrawaddy flowing south. The latter divides again after ten or twelve miles to form a loop known as the Yazudaing which runs parallel to the Irrawaddy branch and joins it again just below Mawlamyainggyun, sending off just previously the Myingakôn branch which joins the recombined Irrawaddy again twenty miles lower down. Tidal action is felt above Shwelaung all the year round; though it is comparatively small there in the rains it reaches ten or twelve feet in the hot weather. But there is a large volume of water passing down the main Irrawaddy and Yazudaing, so that the water only begins to get brackish even in the hot weather at Mawlamyainggyun, and is fresh enough for drinking if taken on the ebb tide down to the last *kwîn* shown on the Irrawaddy banks in the maps of this report. Only three miles to the east of these the small Myitkale River which forms the south-eastern boundary of the district, having only a small flow of Irrawaddy water coming round by the Kyakpi River, is so salt in the hot weather as to reduce the fertility of the fields which it inundates. The Shwelaung River is as large as the Irrawaddy branch, and is further increased by receiving a supply of water through a large arm given off by the Yazudaing shortly after that river divides from the Irrawaddy. Thus reinforced it flows on as the Kyunpyathat River past Kyôn mangè and sends a large volume of water through the Kanyinbin River into the Pyanmalaw. The name Kyunpyathat continues to be given to the wide stream which goes straight south from Kyôn mangè to rejoin the Irrawaddy just below its junction with the Myingakôn; in its lower reaches the water of this stream is distinctly more brackish than in the Yazudaing in the same latitude; it is not potable in the hot weather far below Kyôn mangè, and in the *kwîns* below the latitude of Saneik which come under its influence one finds steadily increasing deterioration through salt-water inundations as one travels towards the south. In the Anan *chaung* and the Kakayan *chaung* which branch off from the lower Kyunpyathat the water is still more salt than in the main stream; it is distinctly brackish in January and except at neap-tide cannot be used after that month in the latitude of Yakaing and Pogwè even for cooking. Throughout March and April it is too salt for bathing; Europeans find it hard for this purpose, Burmans say it causes irritation and eruptions of their skin. The water of the Pyanmalaw on the other hand, derived partly from branchings near Shwelaung of the Shwelaung River and from the drainage of Einmè Township and reinforced by the water of the Shwelaung River which passes down the Kanyinbin River, is potable even near Kanbè if taken on the ebb-tide all through the hot weather. The people of Kanbè have tanks for drinking water because some well-disposed benefactors gave them, and the tank-water is liked because it is free from silt; but all the small villages round about use only the river water for all purposes. Going a little north of Kanbè along the Pyanmalaw the water gets steadily even fresher; but if we turn off after about two miles into the Tatalu *chaung* and travel another mile or so up that we find a sudden increase in salinity owing to the influx of water from the other mouth of the Tatalu *chaung* in the Ywe River, in which the water is much saltier than in the Pyanmalaw in the same latitude owing to the comparatively small quantity of fresh water coming down it. A curious fact which affects the assessment-capacity of some *kwîns* is that in the hot weather the Pyanmalaw just above its confluence with the Kanyinbin River is more brackish than below that confluence; the explanation is again the connection through numerous small channels with the salt Ywe River, followed by the dilution due to the fresh Irrawaddy water of the Kanyinbin *chaung*. In fact the Ywe River and the Thetkèthaung River are best regarded as long tidal inlets which have streams flowing into them at their heads, while the Pyanmalaw is a fresh-water river with enough force to

keep the salt water down to its lowest reaches. The salinity of the Thetkèthaung River is indicated by the salt-manufacture which is carried on by evaporating its waters at Sagyin nearly due west of Labutta and connected by water with that town at which the river is practically equally saline. The Kôntha River which runs down the centre of Myaungmya Township, beginning in the flooded lands behind the smallest Myaungmya dome, receives no supply of fresh water in the dry season and has nothing but the tidal water which comes from the Thetkèthaung along the Pinlegale River; but the hot-weather water of this river has little to do with cultivation, as its basin is the shelf beside the middle dome and in most places its tides do not overflow at that season.

10. Thus with regard to water-flow the settlement area lies nearly north-east and south-west. A line of equal salinity is not a parallel of latitude but slopes from north-west to south-east with a bend down the valley of the Pyanmalaw. Dhani (*Nipa fruticans*) will not grow where there is quite fresh water all the year round. At Shwegôn and above Kyônmenge on the Kyunpyathat River it grows only in small patches; from Mawlamyainggyun one must still go some way south to find it, but it grows well at Myaungmya and at Sagamia on the Ywe River in the latitude of Myaungmya. The difference in the Ywe and the Pyanmalaw water is clearly shown at Sagamia and at Ywathagyi which is three miles distant to the east but on the Zaletaw which is an upper part of the Pyanmalaw; at Ywathagyi dhani does not grow. The north-eastern limit of dhani (shown roughly in the frontispiece map) running approximately from just above Sagamia to just above Myattha, indicates where the first traces of salinity begin in the hot season though the water is not there salt enough to affect its taste and other drinking qualities. Apart from a modification for the exceptionally fresh character of the Pyanmalaw water and an irregularity in the Myitkale River on the eastern side, one may generalise that the river waters get steadily saltier in the dry season as one travels to the south-west, that is, at right angles to this line.

11. The last two sections suggest that the tides are amongst the principal factors influencing cultivation and that is indeed the case. To describe their action a beginning may be made in the standard level of the plane in which lies the area between the towns of Wakèma and Mawlamyainggyun. Here the water is fresh all the year round; the tides do not as a rule overflow the river-banks but enter by side channels, and generally the best lands only get slightly covered with water or are not reached at all by the spring tides of the hot weather. Even in the rains there is no entry of tidal water in these levels at neap tides, although the second and third classes of soils may sometimes receive water during the neap tides many fields are able to evacuate then more water than they receive, and thus, apart from the vibration of level at each flood tide, effect a steady reduction of water till the next spring tide. The days of no entry in first class levels at Wakèma are from the eighth to the twelfth days, and the days of maximum entry the fourth and fifth days of the waxing or waning moon. From the thirteenth day to the third there is a steady increase in the height of the high tide followed by a steady decrease from the fourth to seventh. If the land is a little high or low these dates may of course retrench or extend by a day. Sometimes the spring tide of the waxing moon is the higher for several months on end, and then it changes for the tide of the waning moon to be the higher.

12. In this favoured area between Mawlamyainggyun and Wakèma the tides do not affect the fields, except in a few odd places, after October or November, and the water can therefore be drained off to let the paddy ripen. But towards the south and still more the south-west (that is, lower down the water-axis of the district) in Labutta Township, where the tidal action is stronger, tides continue to enter in November and the water begins to be brackish except where only water from the Pyanmalaw is received; and this causes a deterioration of the harvest—reducing both its measure and its specific gravity—and also adds to the difficulties