A report on some aspects of peasant agriculture

IN THE ST. AUGUSTINE AREA OF TRINIDAD, B.W.I. VIZT:—

(a) Lowland Area, South of St. Augustine.
(b) Hill Land Area North-West of St. Augustine.

WITH A GENERAL INTRODUCTION.

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NOTE: — References are numbered thus "(2)" and with Maps and Tables, are at the end of the Report.

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For the purpose of administration, the Island is divided into 117 Electoral Units - the Island and Hill Land areas being in the Ward of St. Georges.

From 1910 to 1946 the population of the Island increased from 44,000 to nearly 54,000. Assuming a progressive increase from 1946, the population at the present time should be in the neighborhood of 57,000 - an average slightly exceeding 300 to the square mile. This is an extraordinarily high density for a small island and almost certainly far too...
1. GENERAL INTRODUCTION

1. Trinidad, the southernmost and largest of the Windward group of Islands lies approximately 10° North of the Equator (Between Lats. 10.30 & 10.50 N and 60.55 and 61.56W) off the Orinoco delta. Having an area of 1862 square miles it forms a rough rectangle 50 miles from north to South and 30 miles from east to west. Originally the island was part of the South-American mainland but is now separated from the coast of Venezuela by the shallow Gulf of Paria which at its widest part is six miles. There are two main mountain ranges separated by a central plain. One, the Northern Range, is a continuation of the Venezuelan System and runs from East to West. The other, the Central Range is, as its name suggests, in the centre of the Island. The Lowland and Hill land areas (to be dealt with in this Report) are respectively situated in the Central Plain and Northern Range.

2. For the purpose of administration, the Island is divided into six Electoral Wards - the Lowland and Hill land areas being in the Ward of St. George.

3. From 1938 to 1946 the population of the Island increased from 440,000(1) to just over 540,000(2) (Trinidad and Tobago 568,619). Assuming a proportionate increase from 1946, the population at the present time should be in the neighbourhood of 570,000 - an average slightly exceeding 300 to the square mile. This is an extraordinarily high density for a small island and almost astronomic for a
tropical dependency. Such a rate of increase would result in the population doubling itself in about thirty years. The people of the Island are broadly divided - as to one-third, East Indians, nearly one half, Negroes and the remainder of Chinese, Spanish, French and English origin.

"Oil" is largely responsible for this large population, the oilfields absorbing a great number of workers (mostly Negroes) who are able to earn such good wages that the wage standard for the Island is set by those paid in the Oilfields.

4. The wealth of Trinidad is largely derived from oil and reference to Table 11 shews that in 1946 about 75% of all exports totalling 57.6 million dollars per annum is attributable to oil and its by-products. The remainder consists of agricultural products. It is suggested by a number of authorities that Trinidad oil production has already passed its peak. Be that as it may, the Oil Companies are undoubtedly intensifying their search for additional sources of supply - a natural and prudent measure in any case in view of the vital importance of the industry to the financial stability of the Island.

5. Table 1 discloses that since 1940 Trinidad has an adverse Balance of Imports over Exports and in 1946 this balance amounted to 20 million dollars. If oil production should fall, this gap must become wider and economic and social disaster must result unless remedial measures are resolutely applied and
timed to become effective co-extensively with any decline and fully operative upon any emergency.

6. Important, however, as oil is thus seen to be, the industry upon which more than one half the population is dependent for its livelihood is **Agriculture** (1) and it is estimated that 80,000 persons (mostly East Indians) are actively engaged in that industry (1). 343,000 acres (or just under 30% of the total area of the Island) are under cultivation and this acreage embraces nearly all the readily available land. That which is left (other than a large tract of land in the centre of the Island given over to the U.S.A. for Army purposes) is forest reserve, swamp, and oil concessions. From Table IV it will be seen that of the available acreage, sugar and cacao account for 180,000 and 82,000 acres respectively and coconuts for 40,000 acres (citrus, coffee, Tonka beans, and bananas occupying very much smaller acreage). As only some 20,000 acres are taken up by food crops of a directly consumable nature and rice is cultivated on 10,000 of these (with Maize occupying a further 2,000 acres) it is clear that the agricultural industry is an export industry which is operated on plantation or estate lines.

7. As far back as the seventeenth and eighteenth centuries the British West Indies were known as the Sugar Colonies and were the most highly prized
of all the British colonies. The reason for this was that the Colonial policy of that time was one of a self-sufficing Empire. Sugar was provided for the European market via Britain - the West Indies being the only world producer at that time, a circumstance which, unfortunate from a social aspect but profitable economically, provided a rich ground for slave trading. Thus at a monopolistic price sugar production increased with the aid of West African slave labour. The abolition of slavery in 1807 and the Emancipation in 1838, struck the first blow at the plantation system and led to many former slaves refusing to work on the sugar estates. They wanted small holdings of their own but the British Government placed as many obstacles as possible in the way of their acquisition in order to prevent a general exodus from the estates. As a result, no attempt was made to develop peasant farming although some estates, in an effort to retain their labour, did grant their workers provision grounds. Despite this, the labour situation became so serious that between 1845 and 1917 Indian labour was imported under a system of Indenture. Nevertheless the sugar industry suffered further decline with the advent of Free Trade until eventually by the 1890's, it was on the verge of ruin. The final blow came with the development of sugar beet production in Europe.

3. It was natural in these circumstances that planters
should turn their attention to other crops and in Trinidad, for half a century from 1870, Cacao provided a profitable alternative. Although it now occupies over twice the acreage of sugar, its value is only one-sixth but the labour and capital requirements are, of course, very much lower than those of sugar.

9. The 20,000 acres taken up by food crops are nearly all in the hands of peasant farmers who form about 2% of the population and each of whom, as a rule, owns or rents from one to two acres. A large majority are East Indians - the 10,000 acres of rice being entirely in their hands. As most of the suitable land for agricultural purposes is already alienated or, although suitable, is inaccessible, there is definite "land hunger" in the West Indies and as a consequence much unsuitable land is being utilised at too high a rental value. Bad methods of farming aggravate the situation which is giving rise to serious problems of erosion particularly in the Hill land areas. The Negro is often the worst offender in this respect for, unlike the Indian, his fore-bears were captured and sold into slavery - thereby losing their traditional and social status. On the other hand the Indian brought his cultural and farming traditions with him and has a greater knowledge of and regard for
the soil in addition to a better understanding of livestock.

10. In 1896 the West India Royal Commission recommended that the Governments of the Leeward and Windward Islands should settle the labouring population on the land as it then appeared to be the only means whereby the population of the Islands could be supported. The Governments were thereupon given the necessary powers to enable them to enforce compulsory purchase of land when necessary, for the establishment of land settlements but only the Government of St. Vincent immediately embarked on the project. In 1929/30 the West India Sugar Commission reported with regret that little had been done in matters of land settlement and emphasised the points made by the earlier Royal Commission. It was, however, left to the Royal Commission of 1938/9 to recommend that as land settlement was only one method of increasing peasant holdings a procedure should be adopted which would (1) improve the husbandry of existing small-holders (2) improve existing land settlements and (3) set up new land settlements.

11. Trinidad has several land settlement schemes in being and that at La Pastora (Santa Cruz Valley) is proving the most successful. On the other hand Lopinot is, in the opinion of the writer, unsuitable for land settlement because (a) it is not easily accessible (b) the land is unsuitable for market gardening - being under derelict cacao and (c) the
cost of the scheme in providing amenities is proving prohibitive. In contrast may be mentioned the Aranguez Estate of 3,000 acres, formerly belonging to the Rapsey family and now carried on as a limited company.

Intensive market gardening under irrigation is carried out in the dry season and rice cultivation during the rains. The Estate is well managed, is easily accessible and, of course, makes no demand on public funds.

12. In the past too many land settlement schemes have been doomed to failure by reason of the fact that, not only has poor marginal land been bought which is often inaccessible but houses are conspicuous by their absence and social amenities are nonexistent. Perhaps the gravest omission has been a lack of reasonable credit facilities available to tide the peasant over the initial years when expenditure is necessarily heaviest. Inevitably he has been (and still is) often in debt and so driven to costly sources of credit, either to the local shop keeper who thereby gains control over the produce the price for which he dictates to the peasant or to professional moneylenders who charge an exorbitant rate of interest which allows the peasant little chance of recovery. Happily, Agricultural Credit Societies have now been set up in Trinidad and Tobago although they have been hampered in their work by dishonest Treasurers - a circumstance which tended to
destroy the confidence of the people. With a total membership of 5,500 they have assisted a large number of smallholders in the development of their holdings not only by monetary aid at a rate of interest usually between 7% and 10% but by encouraging thrift, self-help and co-operation.

13. Historically, in the West Indies, the only form of tenure regarded as secure is that of freehold but it has proved to be not only detrimental to the land but to the community, the greater part of which is illiterate and prone to indulge in primitive forms of agriculture leading to exhaustion of the soil and erosion. It encourages excessive fragmentation of the holding and exhaustion of capital resources by purchase. To counteract these defects, land settlements are being developed under leasehold tenure—long leases being granted subject to review at the end of a specific period and renewable, provided the land is being farmed satisfactorily.

14. By normal nutrition standards, the diet of the average West Indian peasant and worker in Trinidad is inadequate. A precise dietary survey was carried out in 1945/6 by the Health Department (2) Table V. This revealed that the average intake of 218 families was 2,400 calories per day and 2,500 calories was the accepted minimum. The calcium and protein content of the diet was particularly low and only vitamin C intake was above standard (Table V). The Department recommended that skimmed milk be made available to schools...
and that more peas and beans should be consumed.

The standard of nutrition in 1946 was lower than that in 1945 which may have been due to the transition from war to peace when less money became available. During the war the American bases employed a large number of workers and paid high wages which enabled the latter to purchase imported foodstuffs normally beyond their reach. Although in consequence the "Grow more food" campaign of the Agricultural Department did not show up in such a favourable light as regards individual peasant production which was far from impressive, the increased production from lend settlements was satisfactory. The Health Department found that the general health of the Colony was fair but the chief obstacle was the illiteracy of the population. It is estimated that in 1946 23% of the total population over 10 years of age and 50% of the East Indian population was illiterate. As to disease, Hookworm was particularly severe and it was estimated that in St. George County 33% of the people were infected, rising to 67% in Victoria. One of the difficulties in reducing the incidence of this disease was created by the insanitary habits of the infected population. Malaria also claims about 15,000 people and these two diseases together with the low nutritive level of the diet, combine to impair the working efficiency of the average labourer. As will be seen from Table VI certain wages have possibly failed to reach a high standard for this reason. Generally speaking, wages have kept pace with the rise
in the cost of living - the latter resulting from:-

(a) The steady rise in price of landed imported goods, especially foodstuffs.

(b) The increased cost of wheat due partly to the revaluation of the Canadian dollar and partly to the removal of price control in Canada.

(c) The lack of supply of lower quality goods.

All these restrict the power of the worker to purchase food, as certain essential commodities (e.g. textiles) must be purchased; as a consequence the standard of nutrition is thereby lowered. It is clear therefore, that if Trinidad is to make any advance, it must first apply itself to the improvement of nutritional standards.

15. "Upon agriculture rests the wellbeing of Colonial peoples; and the ability of a Colony to provide a satisfactory standard of living depends on the prosperity of its agriculture." Trinidad is no exception and in order to provide a satisfactory standard of living there must be an increase in directly consumable food crops (especially the protective foods, cabbages and greens), in animal proteins and in the milk supply - a valuable provider of calcium. As previously indicated, agriculture in Trinidad at present is simple and to some extent primitive. Livestock is entirely ancillary to crop husbandry - the care of animals being imperfectly understood particularly by the Negro. Cattle are often kept solely for transport and work. Mixed or alternate husbandry is unknown and shifting cultivation is still carried on with all its attendant evils. To bring
about an increase in home-grown food therefore, all the energy and skill of the Agricultural Department must be applied to the task. The bringing of more land under cultivation should await the introduction of improved methods of cultivation to the already existing cultivators as well as instructions in the use of fertilizers implements and the use of improved seed varieties etc., but incentives will have to be given. Mixed farming and Animal husbandry must be brought more into the agricultural set-up and attention will have to be paid to the provision of storage facilities for surplus produce. Already the Agricultural Department has done much since the war to assist the Cacao and Sugar Planters to stand on their feet and to restore production. The gap between Exports and Imports, to which reference has already been made, can most surely be closed by increased export of Cacao and Sugar and by decreasing food imports. Once establish a definite Agricultural policy linked with close co-operation between the Agricultural, Educational and Health Departments and gradual but definite improvement will be brought about which should be apparent in say a period of five years. It is difficult to believe that some such policy does not already exist but it is also difficult to discover much visible evidence of it.

16. In approaching the matter, existing problems and conditions must be fully appreciated otherwise intended improvements may be of little or no value. The obvious
and only true method of appreciating the position is in the field where an area survey must be carried out. Failure to do this is exemplified by the groundnut scheme which was launched without a complete survey being undertaken.

17. The two areas analysed in this Report are of a widely contrasting nature as is suggested by their titles. "The lowlands" is a flat area mainly given over to rice cultivation.

The "Hill-lands" are given over to ground provisions. Unfortunately the "Survey value" of these two areas must necessarily be limited to the time available for their survey as together, they proved to be too large a project to be completely disposed of.
LOWLAND AREA SOUTH OF
ST. AUGUSTINE.

18. The area, lying South of St. Augustine and Thanigama lying at the foot of the Southern range, is about triangular in shape and is about 2(1/4) sq. miles in extent. It stretches immediately Southwards from the Churchill-Roosevelt highway as far as the Thanigama River which forms its southern boundary. The eastern and southern boundaries are those of the old Skrinkilla Lodge Island, formerly a sugar estate, and are indicated on the "Road and lands map" as single red lines. The area under consideration comprises only a part of the original estate. To the East and South East is the Orange Grove sugar estate and to the South and South East Cotton Estate.

19. The area is easily accessible by road both from Port of Spain to the west-Arima to the East and from being about eight miles distant on both sides. St. Augustine and Thanigama are two miles distant. The Trinidad Government railway (Port of Spain - San Fernando line) traverses the area, and at least diagonally N.W. to E.S.E.

(6) Topography.

20. The lowland area is a low lying alluvial plain (photograph giving some idea of the topography) ranging
18. The area lies about one mile due South of St. Augustine and Tunapuna lying at the foot of the Northern range being roughly rectangular in shape and is about 2½ - 3 sq. miles in extent. It stretches immediately Southwards from the Churchill-Roosevelt highway as far as the Tacarigua River which forms its Southern boundary. The Eastern and Western boundaries are those of the old Streatham Lodge lands formerly a sugar estate, and are indicated on the "Road and trace map" as single red lines. The area under consideration comprises only a part of the original estate. To the East and South East is the Orange Grove sugar estate and to the South and West Carani Estates.

19. The area is easily accessible by road both from Port of Spain to the West, Arima to the East each town being about eight miles distant. Curepe, St. Augustine and Tunapuna one to two miles distant. The Trinidad Government railway (Port of Spain - San Fernando line) transverses the area more or less diagonally N.W. to S.E.

20. The Lowland area is a low lying alluvial plain (photograph 1 giving some idea of the topography) ranging...
View of the Padi fields looking N.W.
giving an idea of the general topography.
from 3 - 75 ft, above sea level. It tends to rise slightly as it leaves the Tacarigua river in the South towards the Churchill Roosevelt road in the North. Nearly the whole area except for the Provision grounds and the Cane fields, (the extent of which can be judged from the Road, Trace & Crop map) is under padi cultivation and is divided up into Sahwals or padi fields, of \( \frac{1}{4} - 1 \) acre. Each Sahwal being surrounded by a mud bank or bund.

21. The main river, the Tacarigua is slow and sluggish and during the wet season it has a depth of about 9 ft but during the dry season it is completely dried up - the reason for this being that the Orange Grove sugar factory uses up the already dwindling supply during crop time. The effluent is then passed via a skimming drain straight into the Caroni river, (see irrigation map) so from January-June this part of the Tacarigua ceases to be a river. Two streams, the Guayabal and Tunapuna flow diagonally across the area - the Tunapuna from North to South being joined by the Guayabal which runs from N.E. to S.W. eventually reaching the Caroni, outside the area. Both dry up during the dry season, the Tunapuna in effect being little better than an open drain subject to pollution, as it passes through the village which gives it its name.

C. Soils. (see Soil Map.)

22. The Lowland area, once a flood plain may be termed young alluvial flats. The soils being immature
and relatively undeveloped do not fall into any rigid scheme of classification, but may be most adequately termed "azonal". The parent rock of colluvial material has been covered by detritus, washed down from the Metamorphic rocks of the Northern Range and its foothills. Water sorting of the colluvium has taken place during the washing down process so that the soil nearest to the foothills contain the highest proportion of sand and as an advance is made into the flood plain the soils become heavier and contain a greater proportion of the clay fraction.

e.g. River Estate Sand. 74.3% Sand.
Golden Grove Sandy Loam 38.5% "
Pasea & Cunupia Clays 19.5% "
Monplaisir Clays very little sand.

23. A very small part of the area consists of the Streatham loams - St. Augustine Loams and sands which are old detrital flats. The soils of the young alluvial flats may be classified as follows:

1. Drainage Fee: - River estate loams,
   Golden Grove Sandy loam, (azonal yellow podsol type).

2. Drainage slow partially impeded: -
   Pasea Clays,
   Cunupia clays.

3. Drainage very slow or impeded: -
   Monplaisir heavy clay.

24. A glance at the soil map will show that the soil type of half the area is pasea clay which resembles a zonal yellow podsolic soil, although not quite mature enough - this soil is a light to medium textured clay retentive of water and makes good paddy fields, as drainage is partially impeded but, there is a fair irrigation and
25. In the dry season it dries out becoming very hard and extremely difficult to fork or dig consequently cultivations during this time are limited to bare minimum hoeing and moulding. River estate loams comprise the next largest type and about half the soil type in E. Streatham lodge is of this nature. It is a deeper brown in colour than pasa clay and zonal brown podsolic type. Drainage is free and the soil is more easily worked.

26. The cane growing area extends over most of this soil type but there is a fairly narrow band of Golden Grove sandy loam running across the middle of the River Estate loam deposits. This soil is very similar in texture - but not so deep in colour as River Estate loams.

27. The remainder of the area consists of small outcrops of Streatham loams, Moloney sands and St. Augustine loams, and it is on these types that the house lots with their provision gardens are situated. These soils contain appreciable quantities of stones and gravel, they are well drained and easily worked and are suitable for growing vegetables and root crops. However, they tend to dry out badly during the dry season and watering becomes very necessary if a good crop of vegetables is to be grown.

28. The fertility status of the soils is low, and they are all on the acid side. The soil is deficient in
organic matter. Results from the manurial trials carried out at I.C.T.A. have shown that applications of pen manure have given better cropping results than the equivalent applications of N.P.K. This is most probably due to the buffering reaction of the Organic Matter and its beneficial effects in increasing the water retention of the soil. At the moment, fertilizers are used all too seldom and only occasional applications of poor pen manure and sulphate of Ammonia are given.

So throughout the year there is a tendency for the rain to fall in the middle of the day and the drying hours are usually around midnight. In May, June and July major peaks occur about mid-day and minor peaks at sunrise, the latter being associated for heavy, short but conventional showers. As the wet season progresses there is a marked tendency for a higher percentage of the rain to fall at mid-day with it reaching 25% in December when 36.2% of the rain falls between 11.00 and 13.00 hrs.

Rain showers are divided into, torrential, medium, or light, (see Table) and it should be observed that although light showers attain those torrential showers by nearly 19%, they only account for two and a half
2. Climate.

(a) Rainfall and Seasons.

29. The climate is Tropical and the rainfall mainly convective. The seasons fall naturally into two distinct periods: a dry and wet season — the dry season extending from January to the end of April and the wet season from June until the end of November. May and December are regarded as transitional periods. In September or October there is a short break of about fourteen days known as the petit carens which may be almost rainless or during which there is considerably less rain which accounts for these two months, averaging less rain than August or November (see table VIII).

3. Throughout the year there is a tendency for the most rain to fall in the middle of the day and the driest hours are usually around midnight. In May, June, and July, major peaks occur about mid-day and minor peaks at sunrise, the latter being accounted for by heavy, short but nonconvective showers. As the wet season progresses, there is a marked tendency for a higher percentage of the rain to fall at mid-day until it reaches its maximum in August when 36.2% of the rain falls between 11:00 and 13:00 hrs.

31. Rain showers are divided into, torrential, medium, or light, (see table) and it should be observed that although light showers outnumber torrential showers by nearly 10:1, they only account for two and a half
times as much rain. Medium showers, twice as numerous as torrential showers result in about the same quantity.

32. The rainfall records, which have been kept over a period of twenty-five years at St. Augustine (Table VII.) show a steadily increasing rainfall from May until an average of 9.61" is reached for August. It then tends to decrease in September and October, during the petit carénis with a rise in November, but again dropping during December with the advent of the dry season. Throughout the months of January, February & March, Trinidad is subject to the South East Trade Winds which are dry.

32. Rainfall records have been kept at St. Augustine for twenty-five years and the average rainfall for the Lowland area which lies one mile to the South of the Meteorological Station may be taken to be 75" per annum. The rainfall is rarely of a prolonged nature and even during the wet season showers lasting more than one hour are unusual.

(6) Temperature and humidity.

34. There is little variation in daytime temperature throughout the year, it rarely exceeds 95°F, the average daytime temperature being 84°F. Similarly the fall in temperature at night is not very great, and very few temperatures below 60-65°F are recorded on the plains. The average night temperature is 72°F, but tends to be higher during the rains owing to the presence of a certain amount of cloud formation.
Sunshine records show that days of less than eight hours sunshine are also comparatively rare and during the dry season seven hours is often recorded. Because Trinidad lies close to the Equator (10°N) there is also little variation in day length, the total variation being something like 45 minutes during the year.

As is to be expected, humidity is at its maximum during the rainy season (see Table VII) while the recorded minimum values occur during the months of January, February and March. The wet and dry seasons, with little variation in temperature between them, have a marked effect on the system of Agriculture carried out in the Island.

3. Vegetation.

The area being under total cultivation there is little or no natural vegetation and if the area were abandoned it would probably return to a Marsh and deciduous forest vegetation which occupied this type of land before it was cultivated. Its return would be via, marsh grasses, & scrub vegetation.

The trees and shrubs have all been planted by hand with the exception of one or two which may have seeded by the natural agencies, and round most of the houses quite a large variety can be found amongst which are: -

- Palms - Coconut, generally round the houses, no plantations, the fruit being used for home consumption.

If there is a surplus they may be sold to hawkers.
Betal-nut. Very few.

Mango. Very common, both in gardens and around the rice fields. Regarded as a sacred tree by the Hindus. The fruit is universally eaten and used in curry's etc.

Citrus. Many self-sown trees and quite common in gardens.

Breadfruit & Chataigne. Former is smooth skinned, the latter spiny, only eaten when other foods are in short supply.

Pomera. Mainly for ornamental purposes.

Hog plum. Fruit eaten, the children being especially fond of it.

Avocado pear. Grown in most gardens - fruit is a valuable source of oils and Vit. C.

Cashew nuts. Nuts harvested, roasted and used in currys.

Bananas & Plantains. Very common found in most gardens.

Papaya. Most of them are suffering from a virus disease consequently the fruits are small and poor.

Tamarind. The fruits are used in the preparation of a stimulating drink.

Calabash tree. Fruits hollowed out and used as water carriers, or basins.

Glyricidia. Grown as a hedge tree for shade purposes.

Croton. Very popular as ornamental plants and in hedges.

Hibiscus. Used for hedges and ornamental purposes.
Roselle Hemp. Ornamental purposes and the fruits are used in curries and chutneys.


The population is entirely East Indians and the area under cultivation is completely in their hands. Not one Nago was encountered in the area during the course of the survey. From the year 1845 to 1937 Indians were offered by the Trinidad Government free passages to Trinidad. In return for this they were to work on the sugar estates for a period of ten years, with an option (according to the past contract) of either returning home or taking up land which the Government officially offered. Under this system of indentures, for every one hundred Indians, forty families had to be included, and the wage was to be twenty-five
(ii) Human Factors.

1. The Population.

(a) Number and density.

39. There has been no official census of the area but an estimate can be given. There are now one hundred and five houses (Bridgeland L. in 1948 gave ninety five.) but additional houses have been erected since then and assuming the average number of occupants per house to be five, therefore some five hundred persons are on this area alone. Perhaps half of the number of peasants who work there live outside it in St. Johns Road, Tunapuna, and in Streatham Lodge village the other side of the Churchill Roosevelt road, one even living as far away as Arouca, five miles distant. It is therefore fair to assume, that the population which the area supports is some one thousand or more an average of three hundred to the square mile which agrees with the official census of the Island.

(6) Race and History.

40. The population is entirely East Indian and the area under cultivation is completely in their hands. Not one Negro was encountered in the area during the course of the survey. From the year 1845 to 1917 Indians were offered by the Trinidad Government free passages to Trinidad. In return for this they were to work on the sugar estates for a period of ten years, with an option (according to the pacta conventa) of either returning home or taking up land which the Government officially offered. Under this system of indentures, for every one hundred males, forty females had to be included, and the wage was to be twenty five
cents per day. This scheme immediately attracted many of the lower caste Indians who were under the impression that Trinidad was to be their salvation and land would be plentiful.

41. However, when they had served their period of indentures, the Government had neither the money nor sufficient land to set them up, and a great deal of unrest resulted. The people had no desire to return to India and their old way of life, and as there was insufficient land for all of them many had to work on the sugar estates all their lives.

42. The people of this area are mostly of Hindu origin although there are a few Moslems. Of the Hindus it is doubtful whether any Brahmins, who are the Priests and ruling class, or Kshatras who form the administrative class and village headmen, ever came to Trinidad. But the Vaishyas being the cattle keepers and the Agriculturists and also the Schudras (the untouchables) came in large numbers hoping of course to improve their lot. Although the caste system now tends to become obsolete especially amongst the modern generation, Priests and village headmen were originally set up but the village is now ruled over by a council of so called pundits.

43. The last shipment of indentured labourers into Trinidad was in 1917 and there are still many of them who remember India, and continue to adhere to their traditions. They still speak Hindustani or Urdu understanding little or no English and they still wear the
traditional loin cloth. A number expressed a wish to return to India but are without the means to do so. The younger generation is gradually drifting away from the land into employment in the towns, where more money can be earned although the height of ambition of any young Indian is apparently to become a taxi-driver.

44. Nevertheless the main occupation of the inhabitants is still agriculture, although there are a few part-time farmers, one having a "parlour" in Timapuna.

**Social Structure.**

45. The pivot round which the social structure is built is the family - it is the duty of the young to support their parents in old age, when they are no longer able to work. The women are regarded as inferior to the men and in addition to keeping the house in order they are expected to work in the fields. Wife beating is still prevalent - especially after a rum party on a Saturday night! Yet marriages create occasions for great ceremonials and are on a lavish scale. They generally take place from April to July during the Mango season, as the Hindu credits the Mango with mystical and magical properties, (and it is always to be found where they live.) It is nothing for the father of the bride to spend several hundred dollars on the wedding, the usual sum being $50-$500.
46. By Hindu law the male issue inherits equal shares and although this practice is now falling into disuse. It is to be observed that in several cases a son who benefits to the exclusion of his brothers will often lend or give part (of the land left him) to them rent free for their own use absolutely.

47. Most of the older people are still illiterate and has been said only speak their native tongue. It is, however, now compulsory for children from six to twelve years to attend School, but it is doubtful whether this regulation is rigidly enforced. There are Schools at Tunapuna Curepe, St. Joseph, and Tacarigua, all one to three miles away from the area.

At Tunapuna education is in the hands of a Canadian Mission and Roman Catholic School. At Curepe one Church of England school and a Canadian Mission. At St. Joseph one Roman Catholic and one Government School and at Tacarigua there is one Government School.

48. The younger generation as a rule only speak English, but now that India has gained her independence there is a revivalist movement amongst the people, who have set up a school of their own where Hindustani is taught and Indian traditions kept alive.

2. Land Tenure.

49. The area (see road and trace map) is divisible into two parts, (East) Streatham Lodge, (often known as the Government land) and (West) Streatham Lodge. The dividing line is the Streatham lodge road, which runs
Land Tenure (contd.)

North to South. West Streatham Lodge was purchased from the Streatham Lodge estate by the Government, which parcelled it out into 1 acre units and sold them to the peasants. East Streatham Lodge is still privately owned and the land is let at a rental between £8 - £10 per acre per annum. In West Streatham Lodge the Government has, however, reserved a parcel of land where rice variety and cultivation trials are carried out. Land is expensive at the moment the prices asked ranging from £600 to £800 per acre, but the demand is great and there is little for sale.

There is a land tax of one shilling per acre per annum.

3. Housing.

50. Houses as a rule do not adjoin the occupants land. The Indian prefers to live within a village community and at least half of them do not live in the area at all but prefer to be on the North side of the Churchill-Roosevelt road, in Tunapuna, or St. John's road. Those who do live in the area are adjacent to the Churchill- Roosevelt road (see map, Roads & Trace) in Streatham Lodge village which extends down Freeman and Streatham Lodge roads.

57. A house is usually surrounded by its own patch of garden (known as the house lot) where the peasant can grow ground provisions and keep poultry. The house (see photographs) is built, often on short stilts by the occupier himself. First a light wooden frame is constructed then a roof of palm leaves or rice straw is put on and the walls are built of...
Better type of Indian house with corrugated iron roof.
(Note ornamental plants).

House on stilts under construction (padi straw roof).
tapia i.e. clay and straw or dried grass mixed together and then applied to the light wooden framework, and left to dry thoroughly. When it is completely dry it is plastered or whitewashed. A house like this costs little to construct and if the builder can afford it he will roof with corrugated iron or duraluminum rather than palm leaves (see photograph). If the house is built on the ground there is generally a small verandah where a hammock can be slung. Inside the house are generally two or three compartments.

52. All cooking is done outside over clay fireplaces using bamboo or other woods for fuel. Sanitary arrangements are as a rule very primitive. The water supply to West Streatham lodge is piped and stand pipes are at certain strategical points (see road and trace map) but these are not plentiful enough and the pressure is very poor.

53. In some cases it is necessary to walk anything up to a third of a mile for water, and pitch oil tins are generally used as containers for this purpose being carried on the head. East Streatham Lodge has to rely mainly on wells which need to be dug out each year, for its supply. There are several such wells situated along the Churchill-Roosevelt road. Water has to be paid for at approximately 96 cents per room of a house per annum, and most Indian houses fall into the one roomed category. The rate levy is 7½% of the rateable value of the house per annum. There is no electricity.
Social amenities are non-existent in the area but cinemas in Tunapuna and Curepe which show Indian films are proving very popular. There are one or two small temples where worship in accordance with his religion may be practised.

4. Food Supply.

The staple diet of the Indian is rice, an average Indian consumes 1 lb or more per day. It is at present rationed the official ration being only 1/2 lbs per head per week and consequently there is a thriving black market. The peasants of this area, however, satisfy their own needs by growing enough rice as a rule for their families. They supplement this rice diet with dried peas (blackeye, bodi & pigeon peas) and with small quantities of roots and green vegetables. The only animal protein they consume is goat meat and dried salt fish. Quite a number have cattle or goats so that they are not without some supply of milk, although it may not be a very large quantity per head of the population, Fruit is also fairly plentiful each lot having its mango and coconut palm.

White flour is purchased and used in the cooking of Chapatis (flour cakes) into which roti (Goatmeat herbs, peas & vegetables) is introduced, to form a favourite dish. Cooking oil (coconut oils) dried fish and sugar are also purchased, a family of eight may spend up to £6 per week on provisions. No pig (which is regarded as unclean) is eaten nor of course cow
which is regarded as sacred.

57. Cooking is done outside the house over clay fireplaces with bamboo or wood as fuel. From personal observation the people of this district appeared fairly well fed and healthy, but no official health analysis of the area could be discovered.

5. Communications.

58. On looking at the Road and Trace map the number of roads in the district appears to be adequate, but it must be borne in mind that most of the holdings are only 1-2 acre units and many of these traces are little more than rough tracks, so that not only the number but also the quality leaves much to be desired. On the Road and Trace Map the roads are divided into three classes -

1) Pitched or tarmac.
2) Rough Surface (gravel or mud) suitable for haulage.
3) Those only suitable as footpaths.

59. Within the area a great many roads or traces fall into the latter class. Class (ii) are only usable as a rule in the dry season and during the rains their appearance is something like a swamp or muddy stream. The roads are particularly bad in East Streatham Lodge where there is no pitched road and no bridge over the Guayabal river (see Trace iii on map) The difficulty thus created for the peasants is one of getting produce off the land and carrying their implements and tools with a corresponding waste of time and energy.

60. Private owners are responsible for the upkeep of roads...
on their land although the local Health authorities accept responsibility for clearing ditches, which if allowed to become stagnant may harbour malarial mosquitoes. After the authorities have cleared the ditches, the owner is expected to keep them in a reasonable state. The Wardens department is responsible for the upkeep of all crown traces but the interpretation of this term is not clear although it is accepted as meaning all roads and traces leading to private property which serves a private community. To this extent West Streatham Lodge benefits because all the land is privately owned in small lots, and the Wardens Office becomes responsible for Freeman Road which is the best in the area and nearly always passable. On the other hand the roads in East Streatham Lodge are the responsibility of the owners. However all the roads need resurfacing and many require relaying, so much so that the Tunapuna Council announced that "no grant can be made towards the upkeep and improvement of the Streatham Lodge estate roads this year!!"

61. Bicycles are becoming popular but the usual means of transport are, on foot, by donkey or bullock cart, mule, horse or buffalo cart. Under existing conditions on foot is the most common method.


62. The aim of the peasant is to be able to feed his family adequately, and this he appears to be able to do. Most of the produce of his land is consumed by
his own household. What little money he makes from selling vegetable crops is used to buy foodstuffs for both humans and cattle, such necessities as flour, oil, seeds, tools, fertilizer and clothes. His is virtually a hand-to-mouth existence and if he does manage to save anything it is often dissipated, and at sometime during the year he is likely to find himself in debt. However, there are certain forms of credit available such as the Su-Su where fifteen to twenty-five people form themselves into a society for the purpose of saving money and lending it to their members. There is also the Post Office bank which is available for saving purposes and allows interest. There appears to be no branch of the Agricultural Credit Society in the district, but as may be expected the money lenders are there and attract many Indians who prefer to go to them because their transactions are kept secret.

63. 7. Land Usage.

The whole of the area is under rice cultivation except for the sugar cane area as can be seen from the Crops and Road map. In the dry season about 1/5th–1/6th of the land is under cultivation, vegetables including tomatoes, okra, lettuces and sweet potatoes are grown. In East Streatham Lodge part is occupied by sugar Cane – Here a large number of the farmers generally known as cane farmers besides renting rice land, also have an area of cane, which they cultivate and harvest themselves, selling afterwards under contract.
7. Land Usage contd.

to the Orange Grove sugar factory.

... generally rectangular in shape and in some cases separated from
one another by a band (sound wall) or a track. They
are small, say plots ranging from one acre but usually
being ½ - 3 acres. In fact, however, the
average size of holding in this area although the
size of an individual holding may vary from ½ - 1
acres, One peasant actually owns 3½ acres but this
is exceptional. If a holding does not exceed 1 acre
then it is generally divided but if more it is often
in two or three parts containing well over one
distance apart. As a rule the average holding is
reduced, divided and of a useful shape.

In other circumstances where the peasant rents
his land he may have a share plot in addition to a
rice or provision plot. The same land is shown on the
property map, but this rice land may be some distance
from this area. The area of a share plot is about
1 acre and a tenant in this region is quite likely
to have an area of one and up to an area of 3 rice
land.

6) A reference to the Greg and West map will show
the residential area (hatched black) to be in the
vicinity of the Churchill-Kommewei road, and
distant from the southernmost plots. These farming
plots south of the Tabarka river have a fairly distinct
to travel especially if they live in Tabarka. As
previously stated most houses also have a small area

- 33 -
1. The Holdings.

The holdings are generally rectangular in shape and in some cases separated from each other by a bund (earth wall) or a trace. They are small, any plot rarely exceeding one acre but usually being $\frac{1}{2}$ - $\frac{3}{4}$ acre. In West Streatham Lodge the average size of holding is $\frac{3}{4}$ - 1 acre although the size of an individual holding may vary from $\frac{1}{2}$ - 2 acres. One peasant actually owns 2$\frac{1}{2}$ acres but this is exceptional. If a holding does not exceed 1 acre then it is generally undivided but if more it is often in two or three parts accordingly which may be some distance apart. As a rule the average holding is compact, undivided and of a useful shape.

In East Streatham Lodge where the peasant rents his land he may have a cane plot in addition to a rice or provision plot. The cane land is shown on the Crop and Road map hatched red and is itself a compact area, but a peasant's rice land may be some distance from this area. The area of a cane plot is about 1 acre and a farmer in this region is quite likely to have an acre of cane and up to an acre of rice land.

A reference to the Crop and Road map will show the residential area (hatched black) to be in the vicinity of the Churchill-Roosevelt road, some distance from the southern most plots. Those farming near the Tacarigua river have a fair distance to travel especially if they live in Tunapuna. As previously stated most houses also have a small area
of provision garden included in the house lot.

2. Crops. The main crop is rice which is grown on every plot (except cane land) during the wet season. The area is ideally suited to rice cultivation being flat with a good water supply from rivers and rain.

In the latter half of the rainy season after the rice has been harvested, such crops as okras, tomatoes, sweet potatoes, peas, beans, lettuces and occasionally cabbages are sown. Yams and pigeon peas are usually sown at the beginning of the wet season, the yams being grown on mounds or ridges while the pigeon peas are often grown on the bunds surrounding the padi fields. Where cane is grown it is generally ratooned four or five times before replanting.

There is no actual cultivated grass in the area and the people do not yet realise its true value. The only grass is that which grows along the road sides and traces and on a few pieces of waste land. The great disadvantages of establishing grass in the tropics is not only its high cost but, unlike temperate grasses, it cannot be seeded and needs to be established by layering or from cuttings. To establish an acre of grass may cost up to £20-100, and it would be impossible for the peasants of the area, with such small holdings, to afford the space or the capital outlay to grow it. Grass and its problems will be furthered considered under the section on livestock.

Tree crops - there are no plantations in the area.
but on the house are many of the trees and shrubs mentioned under "Vegetation are to be found. Whatever else the people lack, fruit is plentiful and readily consumed in particular the Mango.

The crops may be divided into subsistence and cash crops, the main subsistence crop is rice. Peas & beans and to a minor extent a few root crops are grown to supplement the rice diet. The aim of the Indian is to be self sufficient in rice which he will never sell unless he has a surplus. It is of such great importance to the area that its cultivation will be considered in detail.

(a) Rice. The type of rice grown is swamp padi is reliant on a good water supply to make its full growth. The West Streatham Lodge area has an irrigation system constructed by the P.W.D. and operated and maintained by the Hydraulics department. No extra charge is made for this service. Although water is available when needed during the padi growing season, June to January, there is no water available between January and June as a result of the Orange Grove sugar factory taking the available water from the Tacarigua and passing it out through a skimming drain, thus exhausting the supply of water which would otherwise flow through the area.

Calendar of events.
May At the end of the dry season the rice area is cleared, weeds are outlassed and the land is dug usually by a fork.
June A small area of the land is specially prepared for
73. cont'd. nursery purposes. Generally about 8 - 9 yards square (in this district) for every acre of rice to be sown. After this area is cleared and puddled two pitch oil tins of seed are sown (one pitch oil tin = 2 galls = 17-18 lbs padi) The seeding rate is thus about 35 lbs to the acre but is found to vary from 30-40 lbs per acre. The usual quantity is, however, two pitch oil tins to the acre. On one nursery near the river the seed had been planted on bare ground at the end of May or beginning of June and covered with sugar cane trash (see photograph). When seen on the 10th of June the ground beneath was quite moist and the seedlings 2" high. By this method moisture is conserved, the trash acting as a mulch so that an earlier sowing can be made.

74. The date of sowing of the nurseries depends of course on the rains. If they are early an early start can be made, this year they are rather late. As a general rule sowing takes place throughout June.

June-July. The land in some cases is ploughed or harrowed, if this is not done it has to be forked again and puddled by the feet.

July. After about a month when the seedlings are 9"-12" high they are pulled and planted by hand about 1 foot apart, at the rate of two to three seedlings per hole. When the plants have taken water is let into the fields (see photographs) As the rice starts to ripen the water is shut off (where it is possible to control it) and the fields allowed to dry out.
Flooded padi field.

Padi nursery under sugar cane trash.
75. If the padi was planted early and made good growth, harvesting may commence in September to October (petit Carame) and then the crop allowed to go on until January or later and a second crop taken. If planted later, then harvested from November onwards, and this is particularly applicable to the unirrigated land of East Streatham Lodge.

September-October. Harvesting is done by hand using a curved knife similar to a sickle and the padi is threshed at once, generally cut one day and threshed the next, on a piece of dry hard ground, which may be open or covered by some form of rough shelter. This is done either by treading for which bullocks are used, the bullocks being made to walk round and round the threshing floor, or by hand, in which case the padi is beaten against a threshing board. It is then winnowed (see photograph) by tossing in the air, the chaff blowing away and leaving the grain behind.

76. Usually the grain or padi is further dried by putting it on sacking and placing it on the public roads (much to the inconvenience of motorists and cyclists) and allowing it to dry in the sun (see photograph). The peasant saves enough of his own seed for the following season's sowing. After a few years he may change his seed by swapping with a neighbour or buying.

77. The yields to be expected vary very much within the area, 2000 lbs of padi per acre is about the average yield in West Streatham Lodge. This figure tends to be lower in East Streatham Lodge where it only
Indian woman winnowing padi. (Notice typical squatting position).

Drying padi on the road.

Government experimental padi plots.
approaches 1500-1750 lbs per acre.

78. The straw is frequently used as thatch for houses or it may be left on the field to rot and provide a mulch to conserve as much moisture in the ground as possible during the dry season, so that tomatoes and other vegetables may be grown with success. It also provides a certain amount of cattle fodder the animals being allowed to pick over the straw.

79. The padi must be milled or hulled, before it can be used for food purposes, and this operation is carried out at the Tunapuna rice mill for which a charge is made of 1 lb of rice or 7 cents per pitch oil tin milled; and the final yield of cleaned rice is 1200-1500 lbs, generally about a third of the total yield of rice is lost in milling.

80. As can be seen from the crop and road map the Government have an area of land in West Streatham Lodge reserved for carrying out experimental work on padi (see photograph). Yields from the best of these plots are in the neighbourhood of 3000 lbs padi per acre. This difference in yield between the Government and peasants plots is entirely due to more and better methods of cultivation in conjunction with the use of fertilizers and higher yielding varieties of seeds. A great deal of the preparatory work is fully mechanized, tractors being used for ploughing and harrowing. Bullocks of course still have to be retained for puddling.

81. An attempt has been made to cost (roughly) the
Growing of one acre of padi from figures obtained from several peasants and in particular from Jit Mohammed who grows 3/4 acre of padi per year in West Streatham Lodge. These figures are not claimed to be representative of the whole area and are only intended to serve as a pointer.

**Cost of growing 1 acre of padi in W. Streatham Lodge.**

(The figures were obtained mainly by cajolery and after much persuasion)

Land owned by the peasant.

- Rent of land for half year (period under cultivation) 5.00
- Digging and clearing stubbles. 10.00
- Cutlassing. 10.00
- Ploughing on contract. 16.00
- Sowing: - cost of seed 35 lbs at 80 per lb. 2.80
  - cost of transplanting. 6.00
- One weeding (possibly) 5.00
- Harvesting} - 6 men for 2 days at 75c per day 9.00
  & Threshing.) 2 bottles rum 2.00
- Milling. 2000 lbs at 7c per lb = 8.00

Total cost = 74.00

Total cost of growing one acre of padi is about $74.

**Returns.**

Assuming a yield 1400 lbs of milled rice = to about 2000 lbs padi. (to nearest 50 lbs.)

1400 lbs clean rice at 7c per lb = 98.00

The glunes or husks 600 lbs are of little value.

Although $74 is the total cost of producing one acre of padi this includes the peasants own labour, so that the actual cost to him is far less.

Actual out of pocket cost to peasant per acre.
(taking the case of Jit Mohammed).
Actual cost of pocket cost to peasant per acre.

(taking the case of Jit Mahoomed)

Rent - (own land) Nil.

Digging and clearing stubbles done by peasant in about ten days - Nil.

Cutlassing done by peasant - Nil.

Ploughing on contract - 16.00

Sowing - cost of seed (saved from previous crop) Nil.

Weeding done by self - Nil.

Harvesting & rum (+ own labour) 10.00 lbs.

Milling, gives lbs milled rice/17 lbs padi - Nil.

... cost is about. 25.00 per acre.

Total yield of Milled Rice.

From the milled yield of 1400 lbs rice must be subtracted about 80 lbs milled rice, as the price of milling; leaving 1320 lbs of milled rice to the peasant.

From the original 2000 lbs padi, 25 lbs should be subtracted for seed purposes, but this makes little difference to the final figure.

The total yield of milled or clean rice to the peasant is about 1300 lbs (to nearest 50 lbs) per acre.

Profit per acre.

The actual out of pocket cost to the peasant as shown is $25 per acre.

The total cost is $74 per acre.

Total value of produce 1400 lbs at 7c per lb is $98.00

... profit per acre is $24.
Total value of produce to the peasant 1300 lbs, is £91.00.
A actual profit to the peasant is \( \frac{91-25}{1300} = \frac{66.00}{1300} \).

(who performs own work).

Earnings or wage per day.

Man days spent by the peasant in producing 1 acre padi including digging, outlassing, sowing etc = 30 days.

\[ \text{His daily earnings amount to } £2.20. \]

Compare this with the average wage of agricultural workers 60 cents £1.00 per day.

But the padi season from sowing to planting is three to four months; taking a six day week, his daily earnings over this period would only amount to 75c - 63c per day.

82. However, the peasant is not concerned with the profit from padi, but with subsistence, as long as he can produce enough to feed his family he is satisfied, only if he has a surplus does he sell.

So the consumption of rice is an important consideration.

Consumption of rice.

Figs. obtained from a peasant in E. Streatham Lodge, who's rice land is situated near to the Tacarigua river, hence he receives plenty of water (high water table) and can take a good second crop.

His family consists of eight, himself and his wife and six children, the eldest being 19.

They consume nearly 8 lbs rice per day. (Adults eat more than 1 lb and the younger children less).

This family also buys and consumes its rice ration
which is 12 lbs per week for the whole family.

Acreage and yield of padi.

He grows 1 acre of padi.

After harvest he allows half the area to grow a second crop.

Yield from full harvest = 2000 lbs per acre.
Yield from 2nd crop = 300-400 lbs per ½ acre.

Total yield = 2300-2400 lbs.

Total production clean rice = about 1600 lbs.
(having subtracted milling charges).

Rice ration for family = 624 lbs.

Total amount rice consumed per yr = 2224 lbs.

Consuming 8 lbs per day.
this amount will last about 280 days.

83. So presumably this family consumes nearer 6 lbs per day and not nearly 8 lbs, or if so the peasants yield figures are inaccurate.

84. However, with a family of five to six one acre of padi, together with their ration, should provide enough rice to maintain them throughout the year, without taking a second crop. This appears to be the general case in this area.

Other Crops.

85. Pigeon peas are often planted on the padi bunds in June and harvested from December onwards. They are then either pulled out or cut down and in the latter case will grow again. They yield well and prices vary from 4-8s per lb. Another method used in the cane district is to plant them on the ridges
of the cane beds, while the plant cane is growing. In one case it was observed that pigeon peas and oohros were planted on alternate ridges. No fertilizers are applied to the crop.

86. **Oohros.** are a very popular dry season crop (see photograph). They are sown at the end of the wet season in December on the padi stubbles. The method adopted is to hoe the ground roughly and to sow 2-3 seeds per hole about 9" to 1 ft apart with about 2 ft between the rows. Cultivation consists of hoeing through about three times during the growing season. Those peasants who have any pen manure often place a ring round each plant and then mould up – by drawing earth to the plant and some peasants use Sulphate of Ammonia in the quantity of ½ oz. per plant = 1½ cwt's per acre. The time of application is when the oohros are about 4"-6" above ground. They are ready for harvesting in March or April and May. In one instance a peasant relied on harvesting 6000 oohros every other dry for ten days or so, from half an acre. The price varies from 10-30 cents per 100 according to the supply. The usual acreages under cultivation vary from 1/20 acre - ½ acre.

87. **Tomatoes.** These being one of the stable dry season crops are planted in November and December and they are ready to harvest from February onwards – many peasants will grow up to half an acre. However, in the dry season tomatoes are liable to suffer from drought and to do well they need to be planted early. In some cases seedling plants are bought from
Field of Ochros
(plus two local beauties)

Young boy carrying water for the lettuce beds.

Planting sweet potatoes (Note raised beds, potato slips, and short-handled hoe.).

General view of an area of sweet potatoes.
the St. Augustine Nurseries but this is more costly than sowing seed; a packet of seed costing 80c. will suffice for ½ acre of plants. The seeds are sown on a small piece of cleared ground (nursery) and then pricked out when about 4" high in rows 2 ft apart and 1½-1¾" between plants. The ground is usually very roughly hoed or scratched before planting — any straw or stubble allowed to remain for mulding purposes. Pen manure is applied where available or sometimes sulphate of ammonia using the same method as for oohroos. The yields average about 1 lbs tomatoes per plant and prices vary from 10-20c per lb retail and 7-16c per lb. wholesale (see market figs. Table IX), so this is an important cash crop.

88. Lettuce. is often grown on plots near the house lots or near to an available water supply (see photograph). The seeds are raised in a seed bed and then the young plants are transplanted to beds about 10 yds. long which are trenched for ease in watering. The cost of labour is 20-40c per bed and a man should be able to make between three and four a day. The seedlings are planted 6"-9" apart and mature in two months. Two crops can often be raised in the dry season. The crinkly mignonette variety is generally favoured and they will realise from 1-3 cents a piece (see market figs. Table IX for price per lb.)

89. Sweet potatoes. (see photographs). They are
99. Sweet Potatoes contd. planted on ridges from cuttings in November and December and are ready for harvesting from March onwards depending on the variety.

90. The ridges are 2ft across and the trench 1ft deep - the distance from ridge centre to ridge centre being 4ft. The slips are planted 6" apart on the ridges. No manures are used as a rule, and they are harvested by digging (using a fork). The yield is about 6 lbs to every 10ft of ridge - the price is controlled at 9c per 2 lbs.

91. One progressive peasant was planting wooly pyrol in the trenches, so that when harvesting the ridges would be thrown back over the pyrol (which is a vigorous grower and leguminous) and thereby act as a green manuring crop.

92. Yams. are grown in gardens near the houses, and not as a rule grown on a commercial scale. They are grown on mounds or ridges.

Lavas and Bodi beans. These are often grown on the rice stubbles.

Melanges. - not very popular, but can be seen in some gardens by the Church-Roosevelt Road.

Maize - occasionally seen in House gardens.

Saffron. grown for culinary purposes.

Sugar Cane. As has been already mentioned many peasants in E. Streatham Lodge have about 1 acre of cane land. The variety grown is B.12 and although not a heavy yielder is ideal for the small farmer. It is a less leathy cane but an account of this is more
easily worked and yields vary from 12-20 tons per acre. The price at the factory is £6.24 per ton of cane - if he burns his cane then he gets 60c less per ton. The final price of the cane is likely to be higher than that mentioned as at the end of the season there is a back payment to be taken into account. Last year the final figure amounted to £7.20 per ton.

93. The general practice is to ration for four years which means that a quarter of the plot is in plant cane. Harvesting takes place from March to May, and the cane leaves make good cattle food.

(c) Times of sowing, weeds, implements.

94. The time to sow or plant is very often dictated by superstition to which cultivators are subject, e.g., the phases of the moon or the signs of the zodiac are factors which are taken into account, (scorpion is a good sign but geminiae is bad).

95. The area appears to be free from any serious plant diseases and weeds with the exception of sedges which are common in the padi fields; moths, crickets can be serious pests in the vegetable gardens, destroying lettuce etc.

96. The implements used are still hand manipulated such as the fork, cutlass, hoe and sickle. A cutlass blade will cost about 60-90 cents depending on size and quality, and a hoe blade about 31 - the peasant usually makes his own wooden handles. Ploughs are mostly of a simple wooden type and they are drawn by
bullocks or buffalo. For land work the donkey, mule, or bullock cart (see photograph) is the main means of transporting produce.

97. From what has been said above in relation to crops it would be incorrect to conclude that during the dry season the whole area is under cultivation. On the contrary only approximately one-fifth of the land (excluding cane land) is under crops and the remainder is left in padi stubbles on which cattle are often allowed to graze.

97.3. Livestock.

Livestock make an important contribution to the Agriculture of the area being kept for both Agricultural and draught purposes.

(a) Cattle - types and condition.

98. There are three species of Bos present in varying admixtures and proportions, in the area.

- **Bos indicus** - Zebu (see photographs).
- **Bos bubalis** - Water buffalo (see photograph).
- **Bos taurus** - European type of cattle - no pure sp. present. (see photograph of high grade Holstein).

99. The pure zebus, and Zebu crosses with taurus are the most common. The water buffalo is used solely for draught purposes and is more common in the cane area. It is doubtful if there are any pure taurus in the area; for if this species is to thrive under tropical conditions, especial care must be paid to management, feeding, and housing, and the peasants method are inadequate in many of these respects.
Donkey cart transporting a load of grass along Freeman road (Note that the surface here is "pitched").

Water buffalo and young charge.

Typical zebu bullock.

High grade Holstein-zebu.
There are far too many animals of scrub type, which are unproductive agriculturally and financially, they provide neither milk nor beef, being only a drain on the land and the peasants pocket. This scrub type often zebu-taurus has resulted from injudicious breeding, the using of poor and often unsuitable species in the case of taurus. Such specimens may be seen tethered by the sides of the Churchill-Roosevelt road. The cross breed which is providing the most satisfactory answer to the problem is the Zebu-Holstein or Friesian Cross (see photograph). The reader may already be aware of the advantages and relative merits of each species and of such a cross for the tropics so only the more salient points will be touched upon.

The Zebu unlike the taurus has a well controlled heat regulatory mechanism allowing it to stand up to tropical heat conditions better than taurus, which degenerates under such conditions unless very special care is taken. It also has the advantage of being able to support itself on food of a rough or poor quality. Against these advantages are its wild temperament and low milk yield, although the B.F. % of the milk is high. On the other hand the Friesian is docile, has a high milk yield of rather low B.F. content, but needs food of fair quality and withstands the heat with difficulty. A combination of these two sets of factor should provide an ideally suited cow for the tropics plus a good and economic
milk yield. Difficulty is, however, being experienced in fixing the type and it is found that the best type of cross is about ¼ zebu, and ¾ holstein—some talk of higher crosses such as ½ and 15/16, but I would suggest that these are impracticable and it is very doubtful whether the return would be worth the extra expenditure and trouble.

102. What is not fully realized is the necessity of improving the quality of the feed if the milking qualities of the breed are also to be improved. Too many cattle, not only in the tropics, but all over the world, receive insufficient feeding stuffs both in quantity and, but often more especially, in quality. It is useless to expect an animal possessing such inherently improved milking factors to express them in terms of a high yield if nutrition is inadequate. The animal must be given a fair chance and the old maxim that "Half the breed goes in at the mouth", should be the watchword of all cattle keepers.

103. It is therefore submitted with some confidence that improvement in feeding must come before improvement in breeding or at any rate the two should go hand in hand. Scrub cattle must be eliminated if any advance is to be made—haphazard calf getting as is the practice will not do. The answer undoubtedly lies in using only animals of both breeds which have proved they possess the inherent qualities which are needed under tropical conditions.
104. These qualities are:—
(i) Good heat tolerance
(ii) Capable of giving good yields.
(iii) Capable of thriving or being able to digest to the full tropical fodders.
(iv) Comparative docility.

105. As yet no actual breed has been fixed, but great strides are being made in this direction.

106. It was not possible to ascertain the average milk yield of the cows of the area but several peasants who possessed zebu-holstein crosses gave their yields at about 2-2½ gallons per day soon after calving. So that yields 500-600 gallons per lactation should be obtainable and possibly a little higher in the more outstanding cases. By their general appearance and condition yields of the scrub animals and some of the zebras must be considerably lower than this figure.

107. Times of calving are of importance — at the moment their seem to be a general preference for calving in the dry season between December and May, this means serving from March to July. In other words at the end of the dry season when the cows condition is at its lowest. Consequently the fertility or conception rate is low, and the calf is born at the time of year when green food is at its shortest — and a good start in life may be denied it.

108. Housing and tethering. The animals are as a rule housed in rough shelters (see photograph) consisting of a few uprights and a palm leaf roof. The floor being of beaten mud. These shelters give protection from the rain and sun (necessary). During the day
Poor scrub type of cattle (Zebu cow).
Note poor stubble grazing.

View of above cow from the rear (Note extreme narrowness).

Cow stalls - Palm leaf roof and beaten mud floor.
108. (contd.) Housing and tethering. They are tethered by the roadside — the traces and roads in E. Streatham Lodge, showing marked evidence of this, the ditches being constantly broken down by cattle grazing in and around them. In W. Streatham lodge it is illegal to tether near the irrigation ditches. In the dry season, cattle are frequently tethered on the paddock and stubbles of those lands not under cultivation, where they are expected to pick up enough fodder (mainly weeds) for subsistence.

(o) Grass and feeding.

109. No grass is grown for the cattle and the cattle owner spends much time particularly in the dry season, roaming the country looking for it. He transports it back by donkey or bullock or more commonly in bundles on his own head. The cattle in the cane area fare a little better by the addition of cane leaves round crop time. This grass and fodder position is serious for it is a limiting factor towards improvement, if only a small area could be set aside improvement could go ahead. In the tropics there is the difficulty of conserving or storing surplus fodder — the grasses make very great growth during the rains and under such climatic conditions it is difficult to make hay and during the dry season there is comparatively little growth. Perhaps the answer lies in silage. At all events a good grass area is needed.
The peasants possessing better grade animals usually supplement the subsistence diet with coconut meal and often molasses.

The amount of coconut meal fed varied, not as a rule in accordance with yield but according to the peasants own ideas, from:

3 - 7 lbs per day in the dry season and 6 - 3 lbs " " wet season.

Presuming that the cow can pick up enough to maintain herself without converting any food into production channels, then this meal ration would be enough to provide from a just over 2 gallons milk per day (S.E. coconut meal 73.5, P.E. 15.1). The peasant who gave his yields as 2 - 2½ gallons per day was actually feeding 7 lbs meal per day in May. This means that his feeding policy is nutritionally sound although he has never heard of S.E. & P.E.

One peasant was feeding 5 lbs meal and enough molasses to make just liquid, he also added a little common salt. One of his heifers can be seen in the photograph (Holstein x zebu - high grade) and she looks remarkably fit considering the photograph was taken in May.

Times of feeding vary and some fed twice and others three times a day. Milking as a rule is usually twice daily.

The price of coconut meal is 5 $ per 100 lb bag, so this can be quite a heavy item of expenditure in the peasants budget. Milk at the time of writing is about 16¢ a pint and cost of feeding stuffs (coconut meal) per gallon is 17-18¢ (taking good grade cows giving 2 gallons per day), so milk production should be a profitable
enterprise, if the peasant goes about it in the right way.

The average price of a scrub cow is £ 30 - 50 each, and of a bull .................: £ 150 "
Trained working bullocks ..........: £ 250 "

115. The bullocks are kept for work purposes, and for ploughing they are generally yoked in pairs. The photograph gives some idea of the method of yoking. About one farmer in six or seven owns some sort of bullock whereas about one farmer in three possesses a cow or cows.

(d) Other Stock.
Goats, are very common and feed on anything they can get.
Poultry, are kept by many households for their eggs and meat many are the bare necked breed and also those of R.I.R. origin are popular. They find their food by grubbing and they may occasionally get a handful of rice.

Donkeys and Mules (see photographs) are used for haulage purposes and many of the farmers living some distance from the area possess a donkey and cart. The photograph of the mule was taken towards the end of the dry season and some idea of the standard of nutrition can be gauged by its appearance.

The cost of a donkey is £ 60 - 80.
Pigs. None kept in the area.

(e) Diseases. Most of the cattle are tick infested but apart from conditions of general malnutrition, diseases or outbreaks do not appear to be very common.
A Common method of yoking.

Mother and daughter

Mule, photographed at the end of the dry season, little more but skin and bones.
4. Manures.

Pen manure is used if the peasant possesses cattle, but little trouble is taken to protect it from losses. It is fully exposed to the sun and the rains and consequently its manurial value is low. Much more care should be taken as regards shade and shelter.

Sulphate of Ammonia is used on the dry season cash crops such as Tomatoes and Cachos. Padi on the other hand does not appear to be manured at all, although experiments have shown that phosphates, which are particularly low on this land, improve padi yields. It is evident from the Government plots that fertilizers could be used to much advantage on these padi fields.

Liming of some of the land might also prove beneficial.

5. Irrigation (see irrigation map).

The drainage and irrigation system of West Streatham Lodge is fairly good. The irrigation distributaries (see photographs) and drainage channels are maintained in good order by the Hydraulics Dept. The dam (see photograph) being operated by a man, employed by the Dept., who also looks after the ditches. The Tacarigua river provides water for the system the water being available from June till January but not unfortunately during the dry season, or at least during crop time, due to the diversion of the waters, already mentioned, by the Orange Grove sugar factory. This year water became available on the 11th June. On the 9th June, the water had reached a depth of six feet in the river and by the morning of the 10th had risen to 8 ft. When
Irrigation.

The dam over the Tacarigua river—built of reinforced concrete.

Concrete distributor channel running over the Tunapuna stream. (Photograph taken in early January.)

Inlet gate on the Tacarigua.

Part of the old disused system in East Streatham Lodge.
it reaches 9 ft the sluices (see photograph) can be opened and the water distributed.

116. In E. Streakham Lodge there is no longer an irrigation system and they have to rely on the rains as well as the Tacarigua, Tunapuna and Guayabal streams for their water.

6. Soil Erosion. This is not apparent as the area is flat and not subject to wash.

7. Markets.

There are several markets in the vicinity, Curepe and Tunapuna being the nearest. St. Juan and St. Joseph are also used to some extent. The peasant either sells his produce direct to wholesalers of buyers who come out from Port of Spain or he may have his own stall in the market. The usual course is to sell to a wholesaler who has his stall in the market. The peasant who owns a cart often prefers to take his own produce to the Port of Spain Market and this also provides an excuse for going to town.

117. The markets are open from 6 a.m. - 4 p.m. on weekdays and the hire of a table (stall) is £0.60 per week or £1.08 per month. The market being officially controlled by the Wardens Office.

118. The prices and supply of certain fruits and vegetables at the Curepe market over the period June - Dec. 1947 are given in the Appendix. It should be noticed that except for tomatoes the prices fluctuate little from week to week.

119. The Indians main cash crops are tomatoes, ochros,
sweet potatoes, lettuce, pigeon peas, and melongene—these are mostly dry season crops their season falling from November - June. A few fruits such as Mangos, oranges, and coconuts may also be included in the cash crop category.

The present system of agriculture in this area is essentially of subsistence farming, and as long as the peasant can support his family in food and other necessary commodities, it is obvious that the area provides little to no surplus food crops or other kinds of subsistence crops. Further there is virtually no surplus.

The initial obstacle in the way of making constructive proposals for the area is created by the large number and the individual ownership of the holdings. This can only be overcome by a cohesive effort on the part of the peasants and by unity of purpose. With a knowledge of their temperament and characteristics it is a fair general conclusion that this will be a difficult and arduous task.

Economic improvements might provide a useful starting point, such as the provision of better water supply, improved communications, in the case of cases and better roads throughout the area, might initially help to install a new equilibrium in the peasant outlook towards work and agriculture.

Agricultural Measures:

(a) Rice production could be raised. To get this
120. Certain general conclusions were drawn in the introduction, and it is hoped that the points brought out in this survey, not only have justified those earlier conclusions, but have emphasised the vital need for increased production in readily consumable food crops.

121. The present system of agriculture in this area is one essentially of subsistence farming, and as long as the peasant can support his family in food and a few bare necessities he is content. It is obvious therefore, that the area provides little or no surplus food crops other than tomatoes, ochros and a few vegetables. Further there is virtually no surplus milk.

122. The initial obstacle in the way of making constructive proposals for the area is created by the large number and the individual smallness of the holdings. This can only be overcome by a cohesive effort on the part of the peasants and by unity of purpose. With a knowledge of their temperament and characteristics it is a foregone conclusion that this will be a difficult and arduous task.

123. Domestic improvements might provide a useful starting point, such as, the provision of better water supplies. Improved communications, in the form of more and better roads throughout the area, might initially help to instill a new enthusiasm in the peasants outlook, towards work and Agriculture.

Agricultural Improvements.

(a) Rice production could be raised. To get this
increase, greater attention should be directed to the Government plots, here propaganda is essential. Parties of peasants should be escorted round the plots, and the reasons for the higher yields and the means of getting them explained. As an incentive they should be given the opportunity of exchanging their unimproved seed for improved varieties.

(b) As dry season cultivation is handicapped by the lack of an available water supply which results in only one-fifth of the land being under cultivation - the peasants should be instructed in the use of mulches and green manure crops as a means to growing more crops. Education in the use of fertilizers too is very necessary.

(c) Livestock improvement is imperative. Scrub cattle of uneconomic value are too much in evidence and must be eliminated. The use of good bulls should be made available, and in this respect artificial insemination could play a valuable part in improvement. High yields are not necessarily economical and in any event are not possible, where feeding and particularly fodder difficulties are so manifest. Yields of about 700 galls. per lactation should be the target, and only those animals proved to be of maximum efficiency as converters of coarse fodder into production (milk), should be used for breeding.

124. Here we are confronted by one of the most difficult problems of the area i.e. how to provide...
enough fodder of decent quality. Under the present set up with such a large number of very small holdings this seems to be almost insoluble but every peasant who keeps cattle must be encouraged to grow an area of grass even if it is only ½ acre. It is well known that tropical grasses, if they are tended properly, produce a large amount of leaf and although this would go some way to solving the problem it does not provide the complete answer.

125. When success is achieved in bringing about the desired livestock improvement a guaranteed market (which is at present non-existent) must be assured to the peasant for his surplus milk. The milk could be assembled at a Central point and conveyed to Port of Spain or elsewhere by lorry. An assurance of a guaranteed market would provide a needed incentive for increased milk production.

126. The immediate aim should not be the wholesale breeding of more cattle but the replacing of the scrub animals by better types. Under present conditions the area is supporting its maximum complement of cattle, and the breeding of better and more cattle must be subservient to a solution of the fodder problem. So the policy should be one of improving the quality of the cattle and the forage first, and then increasing the forage and consequently the number of cattle. It has already been suggested that silage might provide an answer to the dry season shortage of fodder, but until the people are sufficiently educated in general agricultural matters, it would perhaps be best to keep this in the background—in other words, first, get the grass!!
Available credit facilities will play a necessary and leading role in effecting any improvements, and it is hoped that they will be forthcoming. Government grants or subsidies might be made towards laying down areas of land to grass, as for instance they are towards re-establishing cocoa plantations.

Improved methods cannot be adopted without more work from the peasant who at present is content to be self-sufficient. The vital issue is "Is he prepared to work harder to produce more, and thereby raise his standard of living?" To decide this issue it is necessary to understand his attitude of mind, his temperament, his spirit of independence, self help, tradition and pride in good work. It has often been said that the West Indian lacks these qualities which are essential for the sustained effort which is the sine qua non of improved conditions. The East Indian who has his roots steeped in the soil is capable of rising to the occasion.

The Government or agricultural department for its part must gain the confidence of the people in order to achieve these improvements and it must be prepared to provide the required incentives. The first step undoubtedly lies with the Government, and if the people know that it is prepared to assist them in effecting improvement, not only by advice but by monetary aid, I feel they will respond. Improvements can only come if there is close co-operation between the peasant and the Agricultural department and the initiative rests with the latter.
British Colonial policy aims, first, at a higher standard of living for the people, which is only capable of achievement by co-operation, between the Agricultural, Administrative, Health and Educational services; and secondly, the advance to political independence which is the logical sequel to the first. At the moment too many of the Island's politicians are concerned with putting the cart before the horse. Political freedom is of little value to a community with a low standard of living unless such freedom is the only means of improving their lot.
152. Description (A). This area is situated on the southern slopes of the Neuse River Range about two miles to the North of the village of St. Joseph and four miles north west of St. Augustine. An approach can be made either from the road from St. Augustine to the Neuse and Chocowinity roads respectively, on which time is estimated at 5000. The approach road to the area is the Neuse road and leads directly to the road on the area within a distance of about 4 miles. All these roads are abandoned and capable of causing motor traffic.

153. The area forms part of a small natural valley or trough on the eastern side of the Neuse valley itself and is sometimes called Slovehills. It is 300-400 acres in extent being long and fairly narrow in shape.

154. Topography (B). This is an area of extremely steep slopes, there being little flat land. Through the valley runs a stream, which is fed from springs and has never been known to dry up. The land rises steeply from the stream and there being no really flat bottom land, the slopes are often 50° or more. At the head of this short valley the land again rises steeply to the top of the range and is traversed by several steep gulches (see rough sketch map and photograph of the area).
1. Background Information.

(1) Natural Resources. 1. Land.

a. Area and Location.

131. This area is situated on the Southern slopes of the Northern range about two miles to the North of the village of St. Joseph and four miles North West of St. Augustine. An approach can be made either from St. Joseph or Curepe, by way of the Maracas and Riverside roads respectively, which then join a short way up the Maracas Valley. The La Baja road later branches from the Maracas road and leads directly to the foot of the area within a distance of about ½ mile. All these roads are pitched and capable of carrying motor traffic.

132. The area forms part of a small natural valley or trough on the Western side of the Maracas valley itself and is sometimes called Floradals. It is 300-500 acres in extent being long and fairly narrow in shape.

133. Topography. (b) This is an area of extremely steep slopes, there being little flat land. Through the valley runs a stream, which is fed from springs and has never been known to dry up. The land rises steeply from the stream and there being no really flat bottom land, the slopes are often $45^\circ$ or more. At the head of this short valley the land again rises steeply to the top of the range and is transversed by several deep gullies (see rough sketch map and photographs of the area).
Photographs shewing the general topography

Note the cleared areas.
The ground in many places is extremely rough, rocks and scree having been exposed by erosion caused by both nature and human agency. The land rises from 300–400 ft at the foot to 2,000 ft at the top of the range above the head of the valley. The spurs or sides of the valley range from 500 ft – 2,000 ft, where they join the top of the range.

There is a continuation of the La Baja road up the valley, but where it enters the area at the foot, it is merely a gravel trace, becoming progressively narrower and more in the nature of a footpath as it climbs the hill. It is only fit for donkey traffic as it is impossible to get a cart or any wheeled vehicle along it, and from it run several branch footpaths leading to various parts of the slopes.

(c) Soils. The soil, where it is present, is derived from Mica, quartz and schist, and is never more than 3"–4" deep. Consequently there is no proper soil profile, even where the land is under forest because erosion has been too rapid. Although there is rapid decomposition of the parent metamorphic rocks due to weathering, erosion due to run off is greater than soil formation especially on the land under cultivation.

In 1947 some form of soil survey was carried out over parts of the area. Samples were taken from 21 holdings under cultivation and from four sites under natural vegetation.
137. The Results showed or indicated that:

(i) All soils samples contained a high proportion of sand fractions, schist quartz and lithosol fragments.

(ii) The p.H. range was from 8.0 to below 5.0, and free Calcium carbonate was present in proportion to alkalinity.

(iii) O.M. status of the soil ranged from high to low and similarly with the Nitrogen status. The C/N ratio ranged from 14.4 to 5.3 being highest in soils containing high O.M. content.

(iv) Available phosphate on six samples from cultivated land was adequate, but on the remaining fifteen very low.

(v) Available potash; (four samples only tested), two were below the critical figure and the other two were border lines.

138. In the laboratory no significant differences could be discovered between the fertility status of cultivated and uncultivated land, except that the uncultivated soils tended to have a higher organic matter status, which supports the theory that of improved structural status of the soil when allowed to return to bush.

139. No significant differences between the fertility status of soils at different altitudes were apparent.

140. These results give some idea of the fertility of the soil, but naturally are subject to many discrepancies. More samples from uncultivated land would have helped to give a more accurate picture. If they could have been linked with cultivated samples
taken within close proximity (i.e. as near to each other as good sampling technique will allow) the results would have been of greater value.

141. The picture given suggests that the general fertility status is low particularly in phosphate and potash while the O.M. content is also too low.

142. The main reason for this is EROSION, which is progressing at an alarming rate in the area and is due mainly to the agricultural practice carried on. Improvement of the fertility and productive power of the land cannot be brought about under the present system. Most of the land should not be arable cropped as at present but should be in forest or tree crops to prevent further loss of soil.

2. Climate.

(a) Rainfall and Run off.

143. There are no rainfall figures for the area but they should be very similar to those of St. Augustine. They may be a little higher, due to altitude as more rain tends to fall on the slopes of the Northern range - but the daily and monthly distribution follows the same tendencies.

144. Reference has already been made to erosion which is mostly caused by rain action and run off over uncovered ground. After any rainstorm one has only to look at the stream running through the area to get some idea of the amount of soil which is being carried away where land is under cultivation. A lot of the heavy rain is of little value to the land,
it is not taken up but runs straight down the slopes. As a result, the soil suffers badly from lack of moisture, and in the dry season is almost completely dried out. This is also having its effect on the natural springs which over the last few years show signs of drying up. The gullies which have appeared at the top of the range are steadily working their way down the hillside and at the moment no effort is being made to arrest them.

(b) Temperature, humidity and seasons.

145. The temperatures tend to be slightly lower than those of the plain but the humidity should be much the same, as of course are the seasons (see Lowland report - temperature humidity and seasons).

3. Natural Vegetation.

146. This is essentially tropical evergreen forest with a proportion of semi- and deciduous species which are found at the higher altitudes. Where land which has been cultivated is allowed to go back or revert, it does so in several stages; the first is generally to scrub vegetation, then to gru - palm and cocorite palm, and finally to high bush and forest trees.

147. Amongst the trees, shrubs and grasses growing in the area the following were observed:

(i) On the higher slopes: Cedar, Immortelle, golden poui, sip, trumpet tree, Cocorite and gru palms, bamboo, cocoa, and balisier.

(ii) On the lower slopes: Sandbox, locust, yellow poui, matchwood, silk cotton, lime, orange, grapefruit,
mango, breadfruit, tonka beans, cashew nut, cocoa, corn grass and razor grass.

4. Water resources. The stream which never completely dries up is the only source of water in the area. It is used both for drinking and by those peasants with gardens near to it for irrigation purposes. There are no underground supplies or wells.

(Unlike those of the first land) are ofagro-spanish extraction except the land which peasants working on the very top slopes. They too appear to have come earth blood.

245. Quite commonly are only part-time farmers, i.e., they have a plot of land on the hillside on which they work during their spare time. Others are normally builders and carpenters, some may be full-time agriculturalists, but they possess their plots down in St. Joseph and divide their time between them and their hill land plots. One plot was found to be worked entirely by two men. It is extremely difficult to make a living off the hill land to succeed in doing what would necessitate a large area of land, another drawback is the difficulty caused by the very steep slopes which make cultivation operations very
(ii) Human Factors.

1. Population.

148. There is no settled population in the valley, and only two shacks in one of which lives the overseer of one estate and in the other the man (Boval Joseph) responsible for keeping the traces clear. Altogether there are 22 or 23 holdings, and most of the peasants (unlike those of the flat land) are of negro-spanish extraction except for three or four Indians working on the very top slopes. One or two appear to have some carib blood.

149. Quite a number are only part-time farmers, i.e. they have a plot of land on the hillside at which they work during their spare time. Others are normally builders and carpenters. Some may be full-time agriculturists, but they possess other plots down in St. Joseph and divide their time between these and their hill land plots. One plot was found to be worked entirely by two women. It is extremely difficult to make a living off the hill land to succeed in doing which would necessitate a large area of land. Another drawback is the difficulty caused by the very steep slopes which make cultivation operations very ....

157. The land of each private estate is in charge of an overseer, Boval, the overseer of the estate.
exhausting to the worker.

150. Most of these cultivators live in St. Joseph, and along Riverside road. To reach their plots on the hillside they may have to walk as much as two miles, which is very tedious when implements have to be taken up as well. One or two possess bicycles, but they can only be ridden as far as the foot of the area. Others possess a donkey which they use as a pack animal. The peasant is as a rule up on the hillside early in the day and finishes at lunchtime to avoid the excessive heat of the afternoon sun. However, many prefer to live down in St. Joseph with its social amenities which they could not share in if they lived on the hill.

151. One of the great disadvantages of not living near their plots is that the produce is frequently stolen and praelial larceny is extremely prevalent. The peasant is thus discouraged from growing the more valuable crops, for it is impossible for him to keep a watch over his produce at nighttime.

2. Land Tenure.

152. The land to the East of the trace going Northwards belongs to Islandez who is a private owner. The land in the bottom belongs to another private owner and that on the Western slopes to the Government. This was formerly part of the Providence estate bought by the Government in 1943 at $50 per acre.

153. The land of each private estate is in charge of an overseer. De lion, the overseer of the bottom
(contd.) land, is of Spanish extraction, and Smith, of negro extraction is in charge of the Islandez estates. Neither of these men receives monetary wages, but in return for services allowed to cultivate an area of land and to harvest the fruits from the trees in his area.

154. The estate of which De Lion is overseer is about 80 acres in extent and consists of the rising land on both sides of the stream with its Eastern boundary the La Baja trace. He has been overseer for fourteen years, dividing his time between the estate and his garden down in Riverside road. At the moment he has only four tenants, each farming an acre plot - at a rent of 5/- per acre per annum. The renting of the four plots provides just enough money to pay the Government taxes on the land. He tries to keep the same people on the land and will allow no subletting. The tenancies are yearly and his policy is one of land improvement and conservation about which more will be said later.

155. The Islandez Estate of which Smith is the Overseer is in more marked contrast, for here the land is open to full exploitation. The Estate stretches to the East of the La Baja road and includes the land above the head of the valley. The land is rented in one acre plots at 5/- acre per annum. One of the duties of the overseer being measuring out the plots. In the dry season when there is little for him to do, Smith becomes a lorry driver to augment his income.
156. On the Government land there are no tenants, but one or two squatters have been clearing an area up on the hillside by burning. No doubt in the course of time the Wardens Office will intervene.

3. **Housing.**

157. As already stated is non-existent except for the two shacks (originally cocoa drying houses) inhabited by Smith and Boval Joseph. The nearest water supply is the stream and there is no sanitation. Each possesses one room only.

4. **Communications.**

158. These are bad within the area. The La Baja trace which is officially termed a bridle path is the responsibility of the Tacarigua local board, which is supposed to clear it twice a year, but apparently the Boards responsibility is more in the breach than the observance. The internal traces are the responsibility of the landlords, and are little better than footpaths.

5. **General Health.**

159. As far as can be ascertained the health of the peasants is good, and their standard of nutrition adequate. Several keep fowls and pigs in St. Joseph and one or two a cow. One or two of the older workers including De Lion and Boval Joseph suffer from bouts of malarial fever, which probably originated in the days before the slump of the 1930's when the whole of the lower area was in cocoa.
Agriculture.

1. Nature of holdings and system of farming.

160. In addition to the lower area part of the upper was until the slump under cocoa cultivation. The land was then allowed to go derelict and cocoa now remains in part only (7 acres) of the lower area. This is tended by De Lion who is trying to reclaim it by pruning and removing the mistletoe, but the cocoa yield is low - 500 trees giving about 250 lbs of beans in the first picking and 110 lbs in the second. The trees do not suffer from disease and no witches broom was noticed, the altitude probably acting as a deterrent to the disease.

161. The holdings in the area consist of rectangular one acre plots scattered about the hillside but more numerous in the valley bottom region. Those high up on the hillside are less affected by prachial larceny but more difficult of access.

162. The system or method of farming is similar to that in many parts of Africa i.e., shifting cultivation. The peasant having cleared a piece of ground, farms it for two or sometimes three years, by which time the land shows signs of exhaustion and he moves to a fresh area. Bush is allowed to grow on the farmer area and after eight or nine years, high bush has completely covered it. This results in the land being allowed to rest from six-eight years and in some cases less on the more accessible land before coming under cultivation again. Although
this does help to restore fertility slightly in
that there is an increase in the Organic Matter
content of the soil, there is a constant drain on the
mineral elements, for the method of clearing is
generally by burning. Consequently the land is
steadily being drained of its fertility merely
relying on a partial replacement when under bush, as
no manures or fertilizers are generally used. This
is only too apparent in the crop yields. According
to De Lion, yields of just under 2000 lbs of corn
and rice were obtainable from freshly cleared virgin
land fifteen years ago whereas the yields now obtained
from freshly cleared land which has been rested are
in the region 1200 lbs only.

163. This fall in yields has been greatly accelerated
by erosion, to which this method lays itself open
especially when carried out on the steep slopes of the
area, and unless precautions are taken and/or
anti-erosion methods instituted, the soil will
eventually be completely transported. No measures,
either in methods of cultivation, suitable crops,
or other anti-erosion means are being taken by the
Islandez estate, which includes all the steeper land.
According to American soil scientists it is dangerou-
go cultivate a slope over 20° and madness to do so
over 30°, but here it is quite common to see slopes
of over 30° under corn cultivation and slopes up to
50° being actually cultivated.

164. 2. Crops, sowing and cultivation methods. Before
anything can be planted the land has to be cleared.
This is usually done in May at the end of the dry season and about a month before the rains. The method is to mark out the area and then cutlass the vegetation, trees and shrubs. It takes two men about three weeks to clear one acre of bush. The trash is then burnt, but before this can be done, it is necessary to clear a tract of ground or trace at least 12 ft wide all round the area to prevent the fire from spreading to the surrounding bush. If the area is not cleared in May then it may be done in August or September (during the petit Careme) (see photos). The Wardens office insists on the trace round the area being cleared before firing, and a permit should be obtained.

165. Once cleared and with the advent of the rains the planting season begins. Cultivations are the very minimum as it is impossible to fork or dig the soil on the slopes because of its shallow depth and the great number of rocks and stones. The usual procedure is to hoe or mattock the land to loosen it up then plant the crop. The Cutlass, hoe, mattock and sickle, are in fact the only implements used.

Sowing.

166. The superstition amongst the Negro farmers in connection with planting has been mentioned. The belief that crops planted or sown as the moon is waxing will do well, but if when waning they will fail, is widely held. Therefore all crops are planted during the period three days before and three days after the new moon. Another superstition is that
Area cleared of bush.
Cassava is grown after pigeon peas, or as a mixed crop, the Cassava will turn into the bitter variety instead of the sweet because pigeon peas have bitter roots. Many also regard fertilizers as evil salts and will not use them. These superstitions are inherited from their forbears and they were wise men who proved it to be so!

The Main crops grown are:

Corn, Cassava, Tomatoes, Pigeon peas, Tannias, Dasheen, Cucumbers Hill rice and plantains.

167. The negro (unlike the Indian) prefers the starchy roots and corn rather than rice. Hence corn, cassava and tannias, take the place of rice which is preferred in the Lowland area; but a certain amount of hill rice is grown on the shallower slopes. Tomatoes and Pigeon peas are the main cash crops and they occupy a considerable part of the holding.

Corn.

168. Corn is grown either as a pure crop or a mixed crop with hill rice. The land is cleared in May-June and the corn sown by making a hole with the hoe and dropping in a grain every 9". The rows are about 1 ft apart. The weeds are kept down by hoeing but as it is impossible to hoe up a slope, the soil is slowly being drawn down the hill. Corn is harvested in September-October, but if planted then, it is harvested in January-February. Maize needs 18" - 22" rain on the crop if it is to be successful so the rainfall is adequate. Yields are about 1200 lbs per acre.
169. **Cassava.** This is a popular crop, as it can be left in the ground almost indefinitely. In Africa it is a famine reserve crop. It is planted either in June or September-October. Vegetative propagation is the method of planting, which the planter carried out by digging a hole with the mattock, placing a length of stem about 10" long in the ground and stamping it in with his foot (see photo). It is ready for harvesting after 9-12 months but as stated may remain in the ground longer. Average yields are about 5 - 6 tons of roots per acre.
The sweet variety is usually grown.

**Tomatoes.**

These being one of the main cash crops, are very important. They are sown in cleared ground from June until November, but late sowing necessitates watering in the dry season, and this may mean carting water a considerable distance. The plants are pricked out about 1 ft apart and constant hoeing is necessary to remove weed competition (see photo). They are harvested from September to March. Yields are low because no trouble is taken to remove side shoots or to stake the plants, consequently they often heel over. ½-lb/plant/about the average yield. They are sometimes grown with cucumbers.

170. **Pigeon Peas.** These are another main cash crop and may be grown as a pure stand or as a mixed crop with Tannias or cucumbers. They are sown in May and June and the peas are ready to pick onwards from
Planting Cassava — here the trash has not been burnt.

Hoeing tomatoes — Note the steepness of the hillside.
December. It is a good drought resister and does well on these hills. Average yields are 1000-1500 lbs. The usual procedure is to chop the plants down after they have finished yielding. Wide spacing is necessary for the pigeon pea is a high bushy growing plant. This year several plots of pigeon peas were attacked by a fungal disease, causing the leaves to wither prematurely and consequently the crop was poor. The peas are usually picked and sold in the local market or to a wholesaler.

171. Tannias and Dashen. These are similar in appearance, but as Tannias prefer a drier situation to Dashen, the latter is to be found on plots near the stream. Both the leaves and the root of Dashen are edible but the yield of root is not so great as that of Tannias. They are both starchy roots and great favourites with the Negro cultivators and are found in any spare corner of the garden. They may be planted from the end of April onwards.

Hill Land Rice.

172. The areas are cleared in May, by burning, and the rice, which is usually of a red variety, is sown straight on the land, two to three seeds per hole about 1 foot apart. The rice is usually sown at the end of June or beginning of July and takes longer to mature than swamp padi, being ready for harvesting in December. Some cultivators plant maize in between the rows, so that they are sure of getting something (as they put it). The yields are
1000-1200 lbs per acre as weeds are a limiting factor here. Many of the hill peasants sell their rice crop or part of it, as they prefer cassava and tannias. Plantains. They are found generally as isolated plants, but in one place there is a small plantation growing on a 20° slope (see photographs) Tannias and cucumbers grow well beneath their shade.

3. Livestock.

173. There is one "permanent" cow in the area belonging to Smith the overseer. Some of the peasants keep cattle at home, and occasionally bring them up to graze on the roughage while they are working. One peasant keeps four or five pigs at his home in Riverside road the maize which he grows makes a useful pig feed. Most of them keep chickens and sometimes goats.

4. Soil fertility and manures.

174. The soil fertility is low and as has already been stated is deteriorating as a result of erosion, and cropping non use of manures. As there is no stock in the area, no pen manure is conveniently available and as both pen manure and artificial manures are too bulky and heavy to carry up the hillside, none is ever applied to the land. Occasionally a peasant may use Sulphate of Ammonia, but this is rare.

5. Erosion.

175. Reference to this evil has already been made many times in this section of the report, but it is a very real and urgent problem as both soil and
Small area of Plantains.

Plantains; growing from a rock?
fertility, are being lost at a very rapid rate on these hills under the present system of cultivation. Normal soil erosion is being accelerated by —

(a) Burning as a method of land clearance. This is usually carried out at the end of the dry season so that when the rains come the ground is bare and the soil easily transported. The greatest danger comes from uncontrolled burning. Nearly every year a fire is either started accidentally or one gets out of hand and ravages part of the hillside. This year was no exception and on the 17th and 18th April a fire spread from the adjacent valley on the East to the Islandez Estate with the result shown in the photographs where a 50° - 60° slope has been completely burnt of all vegetation. Note the scoria, rocks and stones.

(b) Cultivations and the growing of unsuitable crops. The usual cultivating tool is the hoe, and as already mentioned it is usual to hoe down the hill; so moving soil also down the hill. Maize and other crops which give no ground cover or protection against the rains are grown on slopes of anything up to 40° the result is obvious.

176. Attention has also been drawn to gullies at the top of the area which are becoming very marked and are spreading down the hillsides and to the fact that no precautions or remedial measures are being taken to counteract them.

177. At the moment there is only a 2 - 3" surface
Photograph showing the extent of burning by the April fires.

Close up of burnt hillside with slope greater than 45°. Note the scree and small rocks.
layer of soil, and if the present state of affairs is allowed to continue there soon won't be even that.

8. Markets.

The markets are the same as those mentioned in relation to the Lowland area and the same prices apply (see Marketing figures). It is extremely hard work transporting produce from the area as most of it has to be carried down on the peasants back or in the case of the luckier ones by donkey.
Suggested Improvements and Conclusion.

179. At the present time this area of nearly 300 acres has just over twenty holdings, and these holdings (in most cases) only partially support twenty families. Areas which are not under cultivation are in scrub bush with a small area of derelict cocoa. Much has already been said of the harm which is being done to this hill land by the present system of Agriculture, and of the loss of soil fertility and of soil, due to accelerated erosion.

180. In the introduction to this Report a plea is made by the writer for an increase in the production of directly consumable food crops and a balanced system of Agriculture but not to the detriment of the land. The reader should be aware by now that this Hill land area with its steep slopes - many over 30°- is quite unsuitable for growing such food crops. Without spending large sums of money on engineering earth works and other anti-erosion measures, it would hardly prove economic and a great deal of guidance would have to be given on the question of maintenance in connection with such a project.

181. The only sure means of preventing further loss by erosion is to ensure that the slopes have an adequate and permanent vegetative cover. The solution which immediately comes to mind is some form of forest covering.

182. De Lion the overseer in the bottom area is well aware of some of the problems confronting this land,
182. (contd.) and his aim eventually is to have the whole of his eighty acres as a mixed plantation of Cocoa, tonka beans, Coffee, and plantains. This from the soil conservationists point of view, and from the economists, is sound. For 80 acres of such a plantation would provide a living for the four cultivators who have plots in his area, (see land tenure) and would produce a higher output than at the present. I would add a suggestion that part of this lower area might go into citrus orchards, especially on the gentler slopes, with a good ground cover of such plants as kudzu, indigophora, or cuscus grass. These species besides providing a good ground cover, are also useful for stock feed. Further anti erosion precautions would have to be taken e.g. the citrus trees could be grown on platforms, but terracing would hardly be necessary on the gentler slopes.

183. On the upper slopes, which mostly belong to Islandez, precautions are also very essential. First the gulley's referred to must be checked before anything else is done. Checks will have to be put in and possibly a diversion ditch, and the gulleys sown with some form of cover. Forest would seem the best solution for most of this area in which teak, mahogany, sip and cedar would grow well, and would provide some financial return, as good wood is in short supply in the West Indies. The return of course will be slow for there is a long initial period.
183. (contd) before such a forest comes into production, but coffee and cocoa on the lower slopes planted under the forest would provide a return in the early years. The timbers could be got out by bullocks and no elaborate roads would be necessary.

184. These estates are in large enough blocks to facilitate such a plan, which with the Agricultural depts. co-operation would provide a greater economic return, and at the same time better conserve the soil and soil fertility, than is the case under the present system. The initial capital expenditure may be rather high and possibly beyond the means of the owners, but it would be in the interests of the Government to make a loan or grant, rather than see these hills reduced to an unproductive waste of rock and scree. Time is so vital that the issue must be faced now.

185. If this project is rejected a less costly remedy must be sought to reduce erosion. Strict control of burning, planting of the max. amount of ground cover crops, construction of terraces, with constant guidance to the peasants in such matters might be effective, but could easily prove more expensive in the long run.

In conclusion my grateful thanks are due to my mentor Mr. Charles Lynn for his invaluable aid and to those people who gave me the benefit of their experience. Last but not least to the English typist who struggled so valiantly and in the main successfully with the draft report.
### APPENDIX

#### Table 1. **TOTAL VALUE OF TRINIDAD'S IMPORTS AND EXPORTS**

<table>
<thead>
<tr>
<th>Year</th>
<th>1939</th>
<th>1945</th>
<th>1946</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports</td>
<td>34.8</td>
<td>65.0</td>
<td>75.4</td>
</tr>
<tr>
<td>Exports</td>
<td>35.8</td>
<td>54.8</td>
<td>57.6</td>
</tr>
</tbody>
</table>

#### Table 11. **SUGAR AND CACAO PRODUCTION AND EXPORT FIGS**

<table>
<thead>
<tr>
<th>Year</th>
<th>1938</th>
<th>1942</th>
<th>1945</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar produced</td>
<td>134.0</td>
<td>110.0</td>
<td></td>
</tr>
<tr>
<td>Sugar exported</td>
<td>120.0</td>
<td>87.0</td>
<td></td>
</tr>
<tr>
<td>Cacao produced</td>
<td>19.0</td>
<td>19.0</td>
<td>19.0</td>
</tr>
<tr>
<td>Cacao exported</td>
<td>19.0</td>
<td>19.0</td>
<td>19.0</td>
</tr>
</tbody>
</table>

#### Table 111. **RELATIVE VALUE OF SUGAR CACAO & OIL EXPORTS TO TOTAL VALUE OF EXPORTS**

<table>
<thead>
<tr>
<th>Year</th>
<th>1938</th>
<th>1942</th>
<th>1946</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total value of domestic exports in mills</td>
<td>33.7</td>
<td>43.1</td>
<td>57.6</td>
</tr>
<tr>
<td>Value of sugar exports in mills</td>
<td>5.0</td>
<td>5.3</td>
<td>6.6</td>
</tr>
<tr>
<td>% sugar to total</td>
<td>14.7</td>
<td>12.3</td>
<td>11.5</td>
</tr>
<tr>
<td>Value of cacao exports in mills</td>
<td>2.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>% cacao to total</td>
<td>7.0</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Value of oil exports to total</td>
<td></td>
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</tr>
</tbody>
</table>
APPENDIX.

TABLE IV of crop acreages grown in Trinidad (1933).

<table>
<thead>
<tr>
<th>Crop</th>
<th>Acres</th>
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<tbody>
<tr>
<td>Cacao</td>
<td>180,000</td>
</tr>
<tr>
<td>Sugar Cane</td>
<td>82,000</td>
</tr>
<tr>
<td>Coconuts</td>
<td>40,000</td>
</tr>
<tr>
<td>Rice</td>
<td>10,000</td>
</tr>
<tr>
<td>Coffee</td>
<td>8,000</td>
</tr>
<tr>
<td>Citrus</td>
<td>7,000</td>
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<tr>
<td>Tonka beans</td>
<td>5,000</td>
</tr>
<tr>
<td>Maize</td>
<td>2,000</td>
</tr>
<tr>
<td>Other good crops</td>
<td>7,000</td>
</tr>
<tr>
<td>Bananas</td>
<td>2,000</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>343,000</strong></td>
</tr>
</tbody>
</table>
### Table VII

**Climatic Factors for St. Augustine**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Humidity</strong></td>
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<tr>
<td><strong>Min.</strong></td>
<td>57</td>
<td>52</td>
<td>50</td>
<td>52</td>
<td>57</td>
<td>68</td>
<td>63</td>
<td>63</td>
<td>62</td>
<td>62</td>
<td>63</td>
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<tr>
<td><strong>Max.</strong></td>
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<td>85</td>
<td>86</td>
<td>87</td>
<td>87</td>
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<td>87</td>
<td>87</td>
<td>87</td>
<td>86</td>
<td>86</td>
<td>85</td>
<td>19</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
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</tr>
<tr>
<td><strong>(night)</strong></td>
<td>68</td>
<td>67</td>
<td>68</td>
<td>71</td>
<td>72</td>
<td>72</td>
<td>71</td>
<td>71</td>
<td>72</td>
<td>72</td>
<td>71</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td><strong>Rainfall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2.95</td>
<td>1.35</td>
<td>1.35</td>
<td>1.96</td>
<td>5.23</td>
<td>8.28</td>
<td>8.49</td>
<td>9.61</td>
<td>7.34</td>
<td>6.22</td>
<td>7.34</td>
<td>6.57</td>
<td>25</td>
</tr>
</tbody>
</table>

**Geographical position of the Station**

10° 38 N - 61° 23 W

**Table VIII**

**Shower Analysis (Wells)**

<table>
<thead>
<tr>
<th></th>
<th>Wet season.</th>
<th>Dry Season.</th>
<th>Total.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Torrential (over 0.75&quot;/hr. rain)</strong></td>
<td>14.4</td>
<td>0.9</td>
<td>15.3</td>
</tr>
<tr>
<td><strong>Medium Rain (0.74 - 0.41&quot;hr.)</strong></td>
<td>15.2</td>
<td>2.7</td>
<td>17.9</td>
</tr>
<tr>
<td><strong>Light Rain (less than 0.41&quot;hr.)</strong></td>
<td>36.8</td>
<td>8.0</td>
<td>44.8</td>
</tr>
</tbody>
</table>

The rainfall averages 78" over 25 years.
### TABLE VI Showing standard of wages from 1939 - 1947

<table>
<thead>
<tr>
<th></th>
<th>1939</th>
<th>1947</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cents/day</td>
<td>Cents/day</td>
</tr>
<tr>
<td>Sugar Plantations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutlassing</td>
<td>40-50</td>
<td>55-180</td>
</tr>
<tr>
<td>Reaping</td>
<td>50-75</td>
<td>75-220</td>
</tr>
<tr>
<td>Draining</td>
<td>60-90</td>
<td>85-250</td>
</tr>
<tr>
<td>Cacao Plantations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutlassing</td>
<td>40-60</td>
<td>80-120</td>
</tr>
<tr>
<td>Pruning</td>
<td>50-75</td>
<td>120-250</td>
</tr>
<tr>
<td>Dook Labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stevedores</td>
<td>200</td>
<td>328</td>
</tr>
<tr>
<td>Shore labour</td>
<td>144</td>
<td>271</td>
</tr>
</tbody>
</table>

The cost of living index in 1947 was 212 taking the year 1935 as base period.
### TABLE V. PRECISE DIETARY SURVEY

Analysis of weekly diet schedules collected from 218 families.

<table>
<thead>
<tr>
<th>Classification by Race</th>
<th>Total protein (gms.)</th>
<th>Animal protein (gms.)</th>
<th>Calories (mgs.)</th>
<th>Calcium (mgs.)</th>
<th>Iron from Vitamin (c.mgs.)</th>
<th>Vitamin A (i.u.)</th>
<th>Vitamin B (mgs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Indian (83)</td>
<td>66</td>
<td>16</td>
<td>2,700</td>
<td>270</td>
<td>12.8</td>
<td>41</td>
<td>3,250</td>
</tr>
<tr>
<td>Negro (111)</td>
<td>55</td>
<td>20</td>
<td>2,450</td>
<td>255</td>
<td>11.0</td>
<td>46</td>
<td>2,700</td>
</tr>
<tr>
<td>Mixed (23)</td>
<td>58</td>
<td>21</td>
<td>2,500</td>
<td>264</td>
<td>11.7</td>
<td>42</td>
<td>2,550</td>
</tr>
</tbody>
</table>

| Classification by occupation |
|------------------------------|-------------------|
| Sugar Industry (43)          | 69                | 15                    | 2,570           | 273             | 13.4                     | 38              | 2,900           | 1.00            |
| Fishing " (41)              | 73                | 19                    | 2,130           | 205             | 10.2                     | 35              | 1,450           | 0.66            |
| Cocoa (16)                  | 44                | 11                    | 1,989           | 226             | 10.5                     | 42              | 2,190           | 0.76            |
| Town dwellers (50)          | 61                | 22                    | 2,420           | 313             | 12.1                     | 13              | 3,532           | 0.90            |
| Semi urban (58)             | 60                | 37                    | 2,450           | 274             | 11.7                     | 37              | 3,700           | 0.84            |
| Asphalt dwellers (7)        | 41                | 16                    | 1,424           | 231             | 9.4                      | 44              | 2,097           | 0.51            |

| Summary for the Colony (217) | 59                 | 18                    | 2,400           | 270             | 11.8                     | 44              | 2,900           | 0.83            |

| Dr. Platt's minimum standard. | 60                 | -                     | 2,500           | 800             | 20.00                    | 30              | 5,000           | 1.50            |

Numbers in brackets in the first column are the number of families surveyed.
<table>
<thead>
<tr>
<th>Fruit/Vegetable</th>
<th>31/5/47</th>
<th>28/6/47</th>
<th>25/7/47</th>
<th>30/8/47</th>
<th>4/10/47</th>
<th>1/11/47</th>
<th>29/11/47</th>
<th>20/11/47</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocado</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peas (each)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas (lb)</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Blackeye</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peas (lb)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breadfruit (lb)</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Cabbage (lb)</td>
<td>3</td>
<td>20</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cassava (lb)</td>
<td>5</td>
<td>3½</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cauliflower (lb)</td>
<td>5</td>
<td>24</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christophe (lb)</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn (dry lb)</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cucumbers (lb)</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dasheen (lb)</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eddoes (lb)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grapefruit (lb)</td>
<td>4</td>
<td>1½</td>
<td>2½</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Green figs.</td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Lettuce (lb)</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mangos (each)</td>
<td>2</td>
<td>8</td>
<td>10</td>
<td>2</td>
<td>8</td>
<td>10</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Oranges (each)</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantains (lb)</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pumpkins (lb)</td>
<td>1</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Salad beans (lb)</td>
<td>5</td>
<td>10</td>
<td>12</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Pigeon Peas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Curepe Market Prices and Supply Position (contd.)


<table>
<thead>
<tr>
<th>Produce</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
<th>S. W. R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigeon Pease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweet Potatoes (lb.)</td>
<td>4 3½ 4½</td>
<td>5 7 9</td>
<td>- - - - - -</td>
<td>5 7 3 5 5</td>
<td>1 3½ 4½</td>
<td>1 3½ 4½</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tannis (lb.)</td>
<td>4 5 6</td>
<td>3 6 8</td>
<td>5 7 9</td>
<td>5 10 12</td>
<td>5 7 9</td>
<td>3 6 8 5 8</td>
<td>10 3 5 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomatoes (lb.)</td>
<td>1 14 18</td>
<td>1 10 13</td>
<td>3 16 20</td>
<td>3 16 20</td>
<td>1 7 10</td>
<td>5 9 14 5</td>
<td>16 20 4</td>
<td>16 20 4</td>
<td></td>
</tr>
<tr>
<td>Gams (lb.)</td>
<td>4 5 6</td>
<td>5 5 6</td>
<td>- - - - - -</td>
<td>- - - -</td>
<td>- - - -</td>
<td>3 3½ 4½</td>
<td>3 3 4</td>
<td>3 3 4</td>
<td></td>
</tr>
</tbody>
</table>

**KEY:**

- **S** = Supply
  - 1 = Abundant
  - 2 = Plentiful
  - 3 = Satisfactory
  - 4 = Fair
  - 5 = Scarce

- **W** = Wholesale price (cents.)
- **R** = Retail price (cents.)
REFERENCES.

1. Agriculture in the W. Indies - Section dealing with Trinidad - (H.M.S.O.)


