Land Settlement and Agriculture, Jamaica.

THE ROLE OF LAND SETTLEMENT IN AGRICULTURAL DEVELOPMENT IN JAMAICA

By

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CHAPTER I

INTRODUCTION

Land Settlement schemes have been established in certain countries for a variety of reasons, but perhaps the most important has been the need for making land available to an otherwise landless segment of the population. Geographers the world over have long been interested in land settlements, since, in many cases, they entail redistribution of population and land use changes. Important social and economic changes are also involved because of the far-reaching effects on the relationship of man to the land. As the man-land relationship is modified and readjusted, so the whole society must be reorganized in order to accommodate members of the population who assume new roles in the social and economic structure of the country in which they live. Land Settlements create a new land holding class whose niche in the society needs to be clearly defined if they are to become important contributors to the economic life of the community.

Before embarking upon this study of the status of Land Settlements in Jamaica's agricultural development, it is necessary to have a working definition of the term "Land Settlement" as a basis for this study. In the con-

text of this thesis, Land Settlement denotes a scheme into which people are organized for settlement on a specially designated area of land in order to engage in agricultural activities. The areal extent of the Settlement Scheme and the number of people settled depend to a large extent on the amount of land available, and the type of agricultural enterprise to be adopted. Hills (1961) has pointed out that the term "Colonization" is sometimes used synonymously with Land Settlement, and refers particularly to settlement on hitherto unoccupied land. He has also said that "resettlement" applies to schemes which involve abandoned plantations and the local population. In the case of Jamaica colonization may be eliminated, for Settlement Schemes have always involved lands which were previously occupied, albeit with land utilization patterns different from those intended under Land Settlement. Resettlement in Jamaica has been carried out under private sponsorship by the Kaiser Bauxite Company in connection with their mining operations, and has involved land purchased from large land-owners, not abandoned plantations.

This brings us to a consideration of the reasons for Land Settlement. W.A. Lewis (1951), writing about the West Indies, lists five different purposes:

(a) to cope with unemployment;

(b) to end the tied house system;

(c) to create garden plots;

(d) to improve conditions of tenure; and

(e) to make the distribution of land more even.

After studying Land Settlement in other countries the following reasons may be added - (i) to improve agricultural production on peasant farms, thereby raising their economic standards, and (ii) to expand production by bringing into cultivation arable land that is being used for purposes other than agriculture.

To achieve these ends, Land Settlement programmes usually form part of an all-embracing Agrarian Reform programme. According to Parsons, agricultural development

> ... is taken to include changes in status of farm people which influence their effective participation in the farm economy as well as the improvement in farm production and land use practices. (Parsons, 1963 p. 4).

Almost without exception, Land Settlement has occurred where the economic status of the peasant population is below accepted standards, partly as a result of the low level of agricultural technology, and partly because of insufficient land. Countries such as Chile, Puerto Rico and Cuba introduced Land Settlement as a

means of land reform,[1] to end farming systems in which agriculture was characterized by "la dominance de la très grande propriété" (Dumont, 1964, p. 191). Under this system vast areas of the best agricultural land were controlled by a handful of wealthy landowners. Most of this land (especially in Puerto Rico and Cuba) was under the production of export crops - sugar cane, coffee, tobacco and bananas. In some cases however, there was only a very extensive form of utilization. Dumont (1964) points out that at the turn of the 20th century "la latifundium de l'Amérique latine, se caractérise essentiellement par une sous-utilisation poussé du sol et des hommes". This statement is also applicable to countries other than Latin America.

As a result of this system of agriculture, the peasants were deprived of land on which to farm and had to become tenants, sharecroppers and squatters. This has given rise to a very destructive use of the land and to a peasantry burdened with an ever-present sense of insecurity. With increasing population growth, there have been excessive pressures on the land depressing peasant agriculture even further. Hence the need for a Land Settlement Programme.

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[1] Land reform is the broader programme affecting land distribution as well as agriculture. Land Settlement is an important part of such a programme.

From a survey of the literature, several general facts emerge. Land Settlement is designed to alleviate land tenure problems and the concomitant pressures on agricultural land, by granting security of tenure to the peasant farmers who were victims of the latifundium system. Redistribution of land and Land Settlement form part of a larger programme of agricultural development, since peasants who receive land are required to follow certain programmes in order to improve agricultural production. (Puerto Rico - Santos, 1963; Cuba - Rodriquez - Caberra, 1963; Ceylon - Farmer, 1957 and Dujaila, Iraq. - Fisk, 1952).

Freehold tenure appears to be the most acceptable land holding system. In other words, the schemes are designed to create an economically independent and stable community of peasant farmers, using improved techniques to increase food production and at the same time improving their standard of living.

In the 19th century, Land Settlement in Jamaica was undertaken in an effort to provide emancipated slaves with land on which to cultivate ground provisions, and also to give them a feeling of independence. By the 20th century however, the situation became complicated by the rapid growth of population, which caused increasing pressures on the existing agricultural land, and resulted in

a high rate of unemployment in rural areas. The Land Settlement Programme inaugurated in 1938, was intended to lessen unemployment and stem the drift of rural population to the towns. It was felt that people would remain in the rural areas to engage in farming activities if land were made available.

This somewhat naive approach created more problems than it actually solved. Too many people participating in Settlement Schemes considered freehold tenure to be a license to do what they pleased with the land. The fact that many settlements were located on very hilly land requiring careful farming techniques, and that farmers were allowed to continue with destructive practices which were a heritage of the slave provision grounds, led to rapid deterioration of the land, soil erosion and exhaustion.

The influence of politics in decisions regarding the location of schemes and choice of settlers cannot be discounted. In addition, the Land Settlement Policy although professing to be closely linked with agrarian development, has had only vague connections with the island's agricultural programmes over the past 28 years, for the functions of Land Settlement in the agricultural sector of the Jamaican economy have never really been clearly defined.

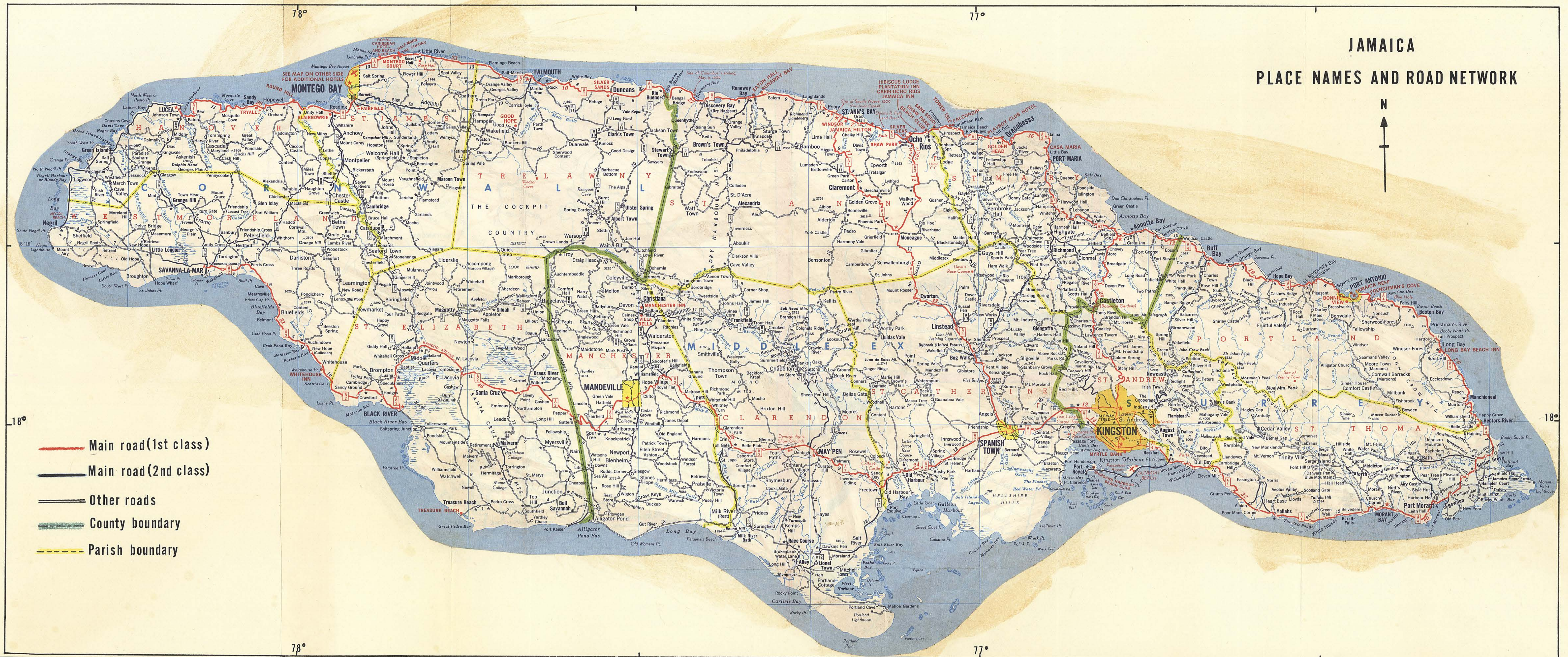
In this thesis it is proposed to examine all aspects of Land Settlement in Jamaica since its inception, and to assess its effectiveness as an agent of agricultural development. The stage will be set by a description of the island's physical landscape - its relief, climate, geology and soils - which will provide the framework for description of its agriculture. The history of Jamaica's social and economic development will then be related, principally in order to explain existing attitudes towards the land (and more particularly, towards farming) among the members of Jamaican society. Relationships between the historical and geographical factors will be established to demonstrate how these factors have helped to create the existing cultural landscape. An explanation of the geographical location of Settlement Schemes will be attempted - not only in terms of relief, climate and soil conditions, but also in relation to the distribution of large properties, i.e. sugar estates, banana and coconut plantations and livestock ranges.

An account of Land Settlement since 1938 will be given, and programme policies examined, with a view to exploring the relationship of Land Settlement to agriculture in Jamaica. Problems inherent in Land Settlement

will be discussed, drawing parallels wherever possible from the experiences of other countries, with suggestions as to how improvements in the present conditions can be effected.

The author feels that this study is a valid representation of present conditions in Jamaica, and that the conclusions arrived at will clarify the functions of Land Settlement in the maintenance of a healthy and productive balance in the relationship between man and the land, by demonstrating how it can enhance the progress of social and agricultural development in Jamaica.

FIGURE 1

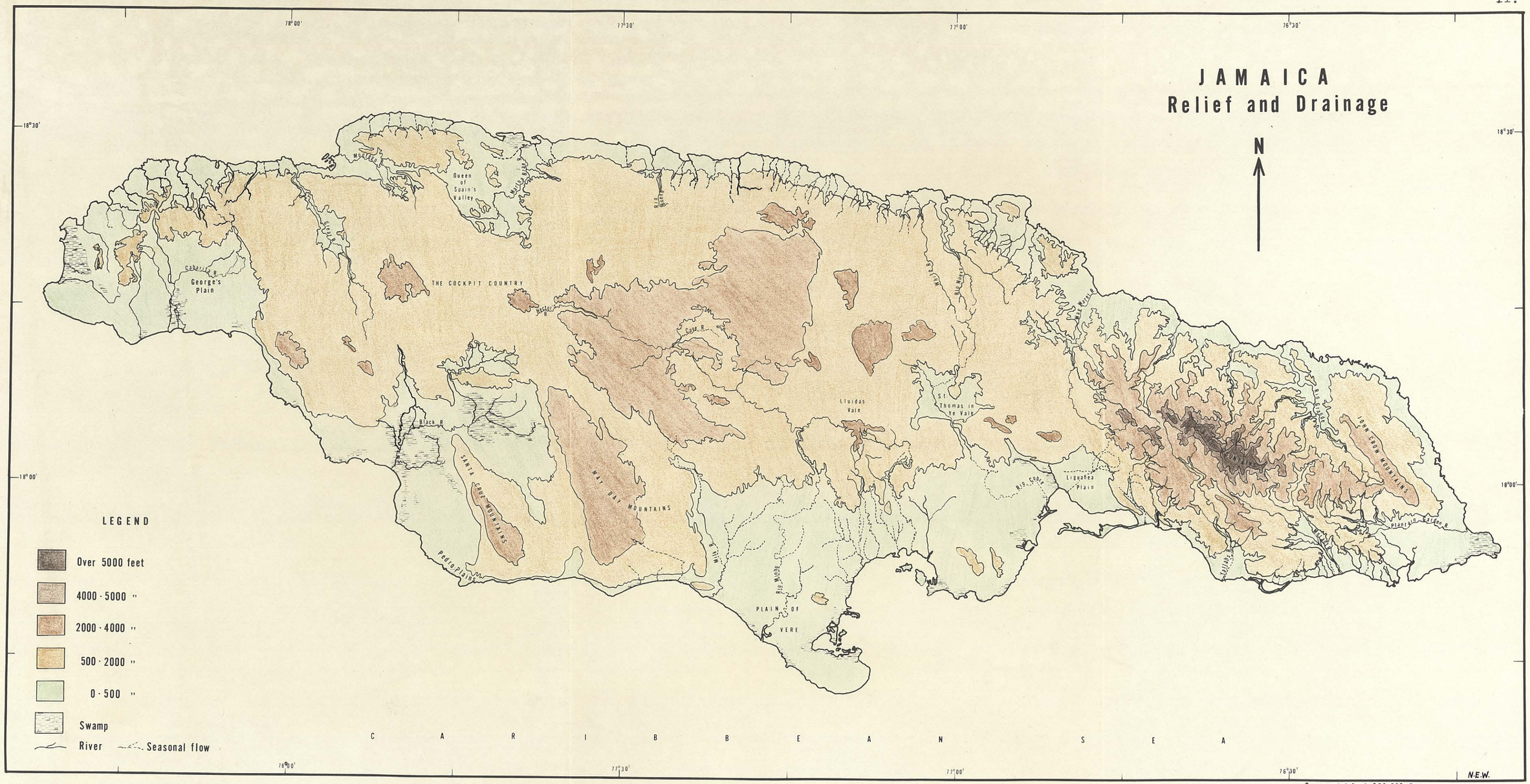

JAMAICA
PLACE NAMES AND ROAD NETWORK
N
Main road (1st class)
Main road (2nd class)
Other roads
County boundary
Parish boundary
MONTEGO BAY
KINGSTON
SPANISH TOWN
MANDEVILLE
MAY PEN
PORT ANTONIO
PORT MARIA
FALMOUTH
SAVANNA-LA-MAR
BLACK RIVER
LUCEA
CORNWALL
MIDDLESEX
SURREY
78°
77°
18°

CHAPTER II

PHYSICAL BACKGROUND

Jamaica, "land of wood and water", has in recent years become the tourists' paradise. Visitors to the island are impressed by the unique beauty of its physical landscape, by its mountains and swiftly-flowing rivers. Few visitors however, are aware of the influence of the island's mountainous character on its agriculture which is such an important sector of the economy. The rugged nature of the island's relief, extolled by novelist and poet alike, has produced rather complex problems which have hindered agricultural progress. True insight into the characteristics of agriculture in Jamaica, and the problems associated with land settlement and reform (with which this study is specifically concerned), can only be gained by examining the forces which have produced the existing conditions.

Local variations in landforms, soil and climate have contributed to the evolution of a type of agriculture, the very nature of which necessitates careful planning on the part of authorities. This chapter will attempt to point out these variations, and will be the framework against which the historical factors of development, and the phenomenon of land settlement must be viewed.

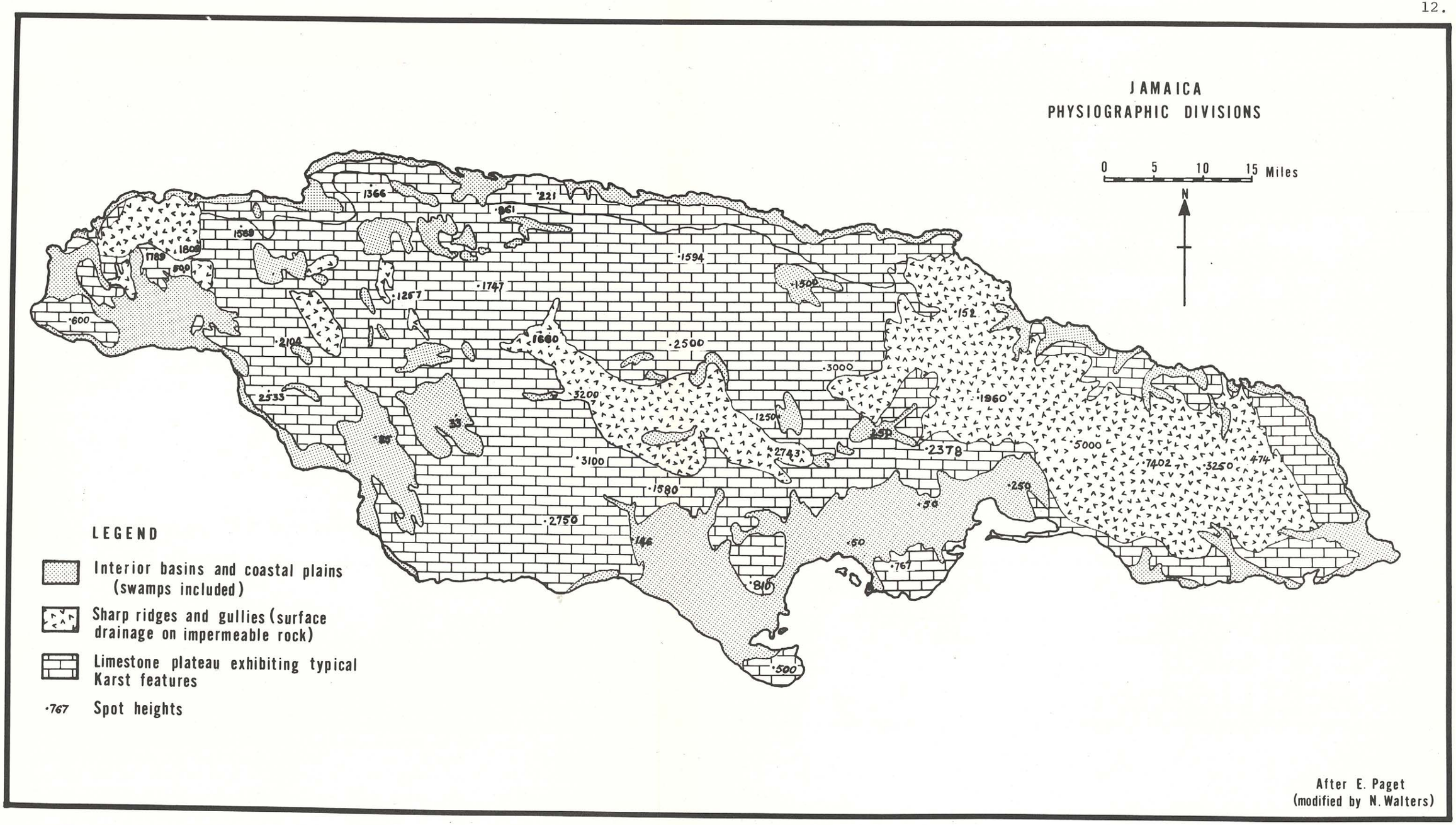


Source: D.C.S. 1:250,000 Relief map of Jamaica

SCALE OF MILES

10 5 0 10 20 30 40 50 60

FIGURE 3



After E. Paget
(modified by N. Walters)

Physiography

Jamaica has been described as a "mountainous, over-populated island" (Dumont, 1963), a description which is justified if one considers the relief and the population densities. The island's 4,411 square miles support a density of 364 persons per square mile. Agricultural land is "limited by the rugged topography, swampy areas and regions where rainfall is too light or too heavy." (Innis, 1959). Only 20% of Jamaica's total area is flat land, the remaining 80% is hilly, with almost 50% of the total area lying over 1,000 feet above sea level. (See Figure 2).

The topographic configuration of the island is governed by the underlying geologic structure, on the basis of which three physiographic regions may be distinguished (Figure 3). These are: (a) the coastal plains and interior valleys, (b) dissected and karsted limestone plateaux and hills, and (c) the interior mountain range. (Zans, Handbook of Jamaica, 1961; Paget, 1956, p. 189).

(a) The coastal plains and interior valleys

These (Plates 1 and 2) include the mangrove swamps found particularly in the southern part of the island (see Figure 2), as well as the coastal lowlands in the south

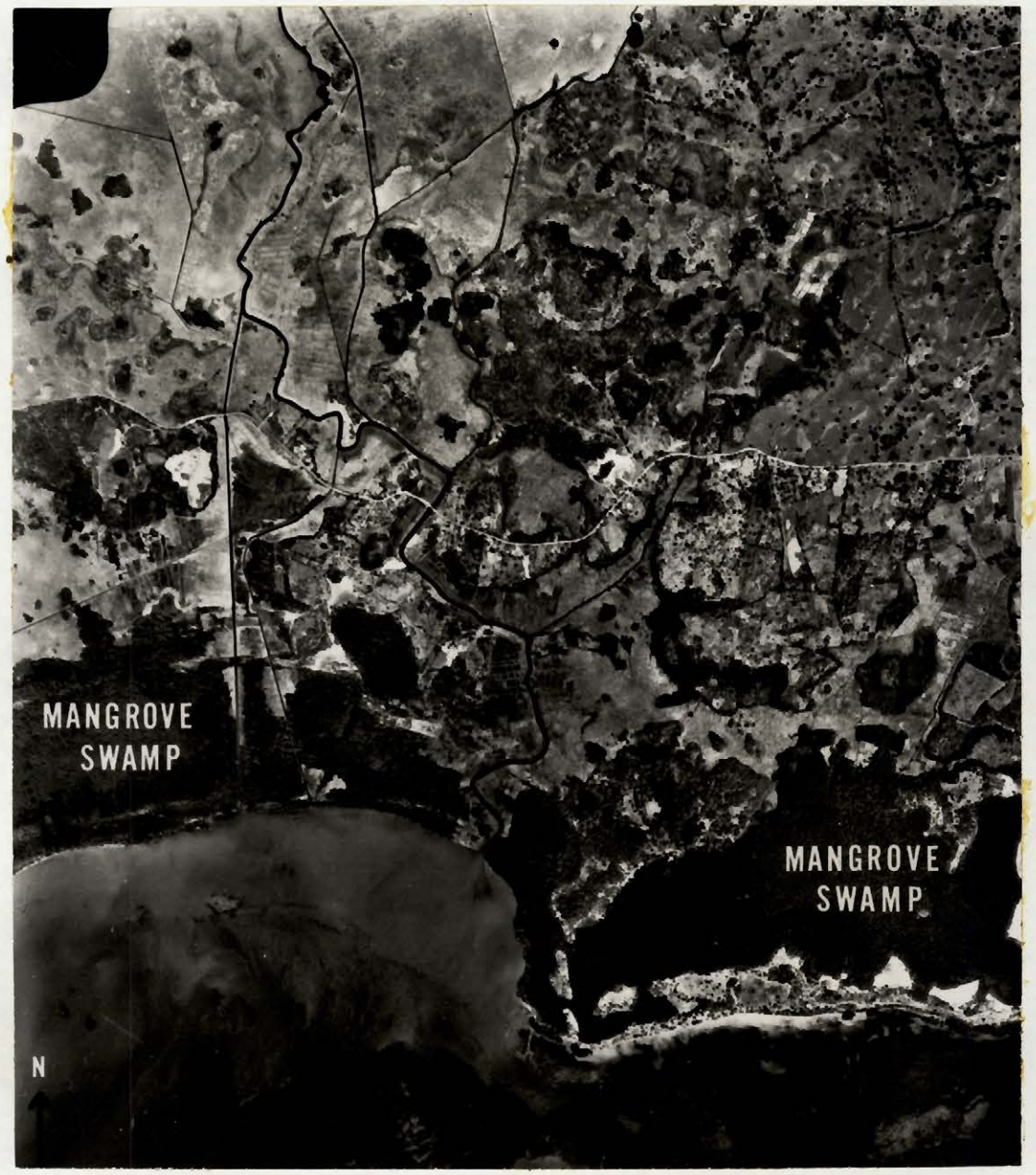


Plate 1 Coastal plain with swampland in the foreground. Note drainage ditches in the upper left of the picture. (Photo by Hunting Surveys Ltd.)

(George's Plain, Pedro Plains etc.), the larger inland basins (e.g. Lluidas Vale and Queen of Spain's Valley)[1] and interior valley flats. These flat or nearly flat lands are composed of sand dunes, raised coral beaches and marine clays, recent alluvial deposits and terra rossa.

The character of the coastal plains and interior valleys is such that agriculture is in no way inhibited (except in the swampy areas), and machinery may be widely used. However, these lowlands possess a variety in soil and parent materials which often proves problematic to drainage (e.g. the area around the town of Savanna-la-mar, Westmoreland). Dryness in parts of this region necessitates irrigation for agricultural purposes, as in the Vere Plains of Clarendon and St. Catherine Plain.

(b) Limestone plateaux and hills

The landforms developed on limestone, which in places is more than 1,000 feet thick, have a wild and rugged appearance, (Plate 3). This is due to the great development of karstic features giving rise to poljes, dolines, sinkholes, caves, lapiés, vanishing rivers and springs. Numerous faults criss-cross the area determining the orientation of the polje-like interior valleys

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[1] Refer to Figure 1 for place names mentioned in the text.

Plate 2 Inland basin used as cattle pasture - Knapdale, St. Ann. (Photo by N. E. Walters).

Plate 3 Air photograph of the Cockpit Country. Note haystack hills, dolines and sinks. Virtual lack of habitation except in the larger solution basins. (Photo by Hunting Surveys Ltd.)

and rows of dolines or 'cockpits'. From the air the area appears as a complex of conical or haystack hills with a limited amount of flat land in between, except where solution basins occur (Plate 4). Local relief in this region may vary from a few feet to 500 feet. The part of this region known as the "Cockpit Country" is an area almost devoid of human habitation (Innis, 1959). Solution of the limestone has produced many caves, the better known ones being the Windsor Great Caves (Trelawny), and the Green Grotto (St. Ann). There are no surface streams in the limestone plateau except where soil material has accumulated, and even these disappear after flowing above ground for a short distance. The Cave and Hector's rivers are two of the better known examples.

Although the limestone plateau appears so formidable from the air, the average elevations in the "Cockpit Country" are between 2,000 and 3,000 feet. The rest of the limestone plateau surface is dissected by many small ravines and ridges which tend to give a rough appearance to the landscape. Chains of limestone hills occur in the south - the Carpenter Mountains and the May Day Mountains in Manchester, and the Santa Cruz mountains in St. Elizabeth. Accumulations of terra rossa in depressions on the plateau are mined by four companies as they contain

Plate 4 Farming on soil accumulated in a polje in the Limestone region. (Photo by Hunting Surveys Ltd.)

Plate 5

Drilling for water near Brown's Town, St. Ann. Water was struck after drilling through almost 1,000 feet of limestone. (Photo by N. E. Walters).

the very valuable aluminum ore or bauxite. The four companies - Reynolds Jamaica Mines, Kaiser Bauxite Company, Aluminum of Canada and the Aluminum Company of America - pursue their mining operations in the parishes of St. Ann, Manchester and St. Elizabeth where the largest deposits of bauxite occur.

Absence of surface water creates a water supply problem which has hampered the development of many of the settlements located in the region. Drilling operations have been carried out from time to time to remedy the situation, but these have mostly been unsuccessful. However, water has been found near Claremont (St. Ann), and repeated attempts near Brown's Town have met with success after penetrating 6000 feet through the limestone. (Plate 5).

Lack of water and limited flat land for cultivation have retarded agricultural progress in the region. Most of the farming in the limestone region is done on hillsides which are very susceptible to erosion, (see Plate 6), and fairly level land in glades or enclosed formations, which have resulted from the coalescence of several depressions, is also utilized (Plate 7).

Plate 6 Oblique air view of the limestone plateau showing hillsides cleared for farming (light-brown patches). [Photo by N. E. Walters).

Plate 7 Sketch of a glade near Cave Valley, St. Ann. ..."formations which have resulted from the coalescence of several depressions ...."

(c) The interior mountain range

The oldest rocks forming the core of the island's geological structure constitute the interior mountain range. This mountain chain trends from northwest to southeast, curving more to the south in the eastern part of the island. (See Figure 3). Conglomerates, shales, schists and igneous materials predominate in the interior mountain range. These rocks of volcanic origin show up wherever the elevations are high and where the limestone has weathered away (Innis, 1959). Characterised by strong relief, the insoluble rocks form the steepest and highest parts of the island. Sharp ridges and lateral, steep-sided, well-defined valleys carved by surface streams create a majestic but forbidding landscape (Plate 8). The region attains its greatest elevations in the Blue Mountains, whose peak rises to over 7,400 feet above sea level (Figure 2). The Blue Mountains which occupy a large part of the parishes of St. Andrew and Portland, are difficult to traverse. A few gaps or passes provide rather tortuous north-south routes, the most widely used being the Hardwar Gap giving access from Kingston to Buff Bay (Portland) via Newcastle.

Sheetwash and landslides are common in this region due to the excessive amounts of water in the sur-

Plate 8 Air Photograph showing part of the interior mountain range in Southern Portland. ..." majestic but forbidding landscape" with precipitous slopes, sharp ridges and steep-sides valleys. (Photo by Hunting Surveys Ltd.)

Plate 9 Steep slopes used for cultivation (St. Andrew parish) now left under a grass cover until required for crops. (Photo by T. L. Hills).

face streams during periods of heavy rainfall. Kingston and the lower parts of St. Andrew sometimes suffer extensive damage as a result of flash floods and increased run-off. Agriculture on the steep slopes tends to aggravate the condition, and erosion has caused devastation in many areas. Plate 9 illustrates the types of slopes which are frequently cultivated in this region. However, abundant water is available for crops, and the igneous materials have weathered to produce fertile volcanic soils in some areas, which favour the production of certain crops, particularly coffee for which the Blue Mountains are famous, and cocoa.

Climate

The mountainous nature of the island's topography influences climatic factors to a considerable degree. Jamaica, situated between 17° 45'N to 18° 30'N and 78° 15' to 78° 15'W, is in the zone of the Northeast Trade winds which are responsible for the rainfall regime described below. However, variations of temperature occur with elevation (Table II-1), and the east-west trending mountains, lying as they do across the path of the prevailing winds, have an important orographic effect on the rainfall pattern.

(a) Temperature

Although the island does not experience a great yearly range in temperature, there is usually a large range between the daily minimum and maximum. To illustrate, Kingston has a range of only 5.6°F between January and July temperatures. However, the range between daily extremes in the winter months is 19.3°F, and in summer the average daily range is 14.4°F.

The effect of elevation on temperature is well illustrated by Table II-1, which shows average temperatures for places at different elevations.

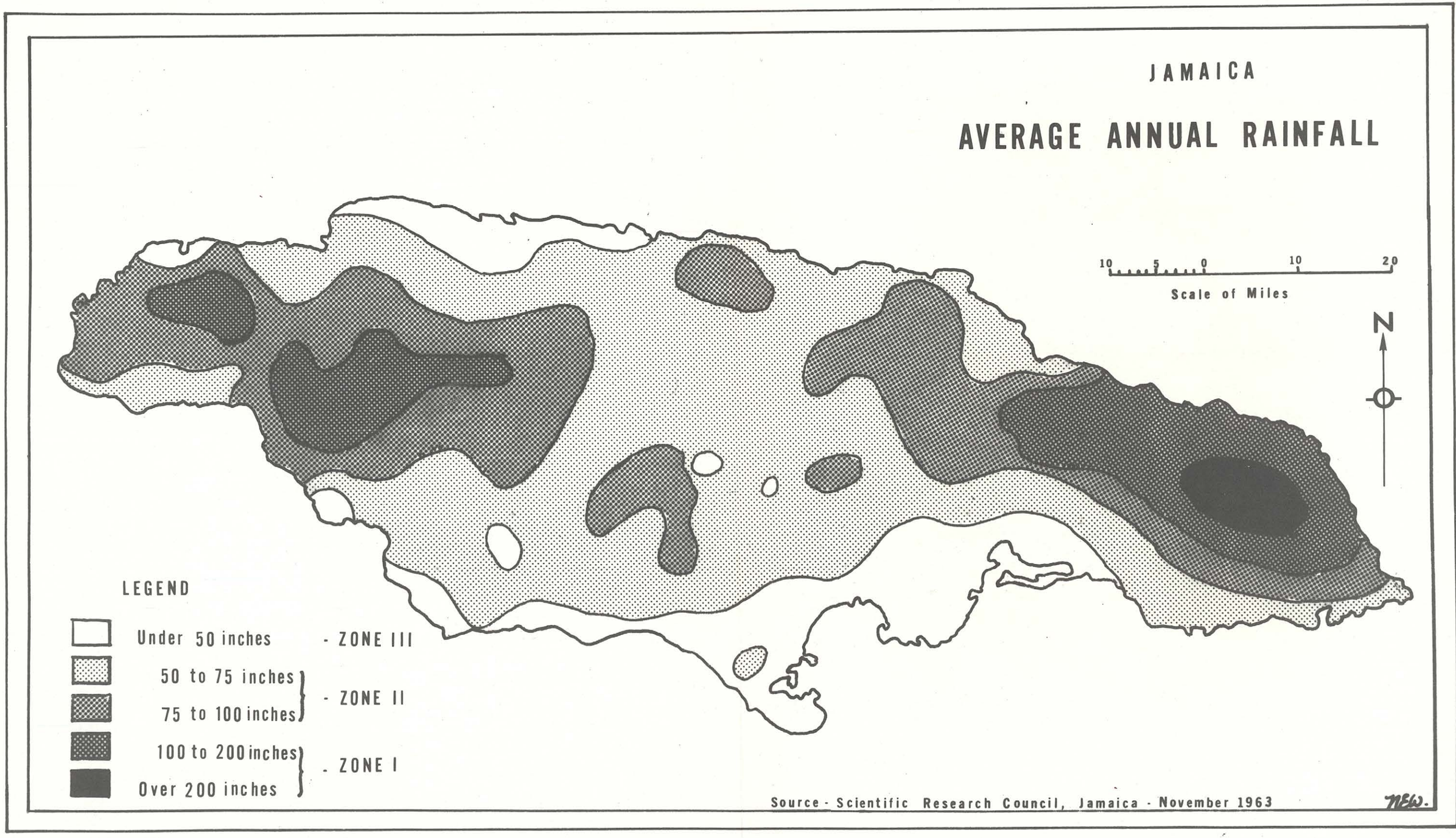
Table II-1

Average Annual Temperature at Different Elevations

Altitude above sea level (feet)	Mean temperature (°F)	Mean maximum	Mean minimum
0	78.7	87.6	71.0
500	77.1	85.1	69.8
1,000	75.3	82.8	68.6
1,500	73.6	80.6	67.4
2,000	72.0	78.6	66.1
2,500	70.3	76.7	64.7
3,000	68.7	74.9	63.3
3,500	67.1	73.2	61.7
4,000	65.5	71.6	60.1
4,500	64.0	70.1	58.5
5,000	62.4	68.8	56.8
5,500	61.0	67.5	55.0
6,000	59.5	66.3	53.1
6,500	58.0	65.2	51.2
7,000	56.5	64.3	49.3

(Source:- The Farmer's Guide, 1962 p. 44)

FIGURE 4


JAMAICA
AVERAGE ANNUAL RAINFALL
10 5 0 10 20
Scale of Miles
N
LEGEND
Under 50 inches - ZONE III
50 to 75 inches
75 to 100 inches - ZONE II
100 to 200 inches
Over 200 inches - ZONE I
Source - Scientific Research Council, Jamaica - November 1963
NEW.

(b) Rainfall

Jamaica's mean annual rainfall computed from ninety-year data is 76.87 inches. However, this rainfall is unevenly distributed throughout the island due to the reasons mentioned above with regard to the orographic effect of the mountains.

Relief has produced an interesting rainfall pattern, and three distinct zones closely related to the topography may be recognized. (See Figure 4 and compare with Figure 2). The zones are as follows:

Zone I - heavy rainfall - annual average over 100 inches;

Zone II - moderate rainfall - annual average of 50 to 100 inches; and

Zone III - low rainfall - annual average less than 50 inches.

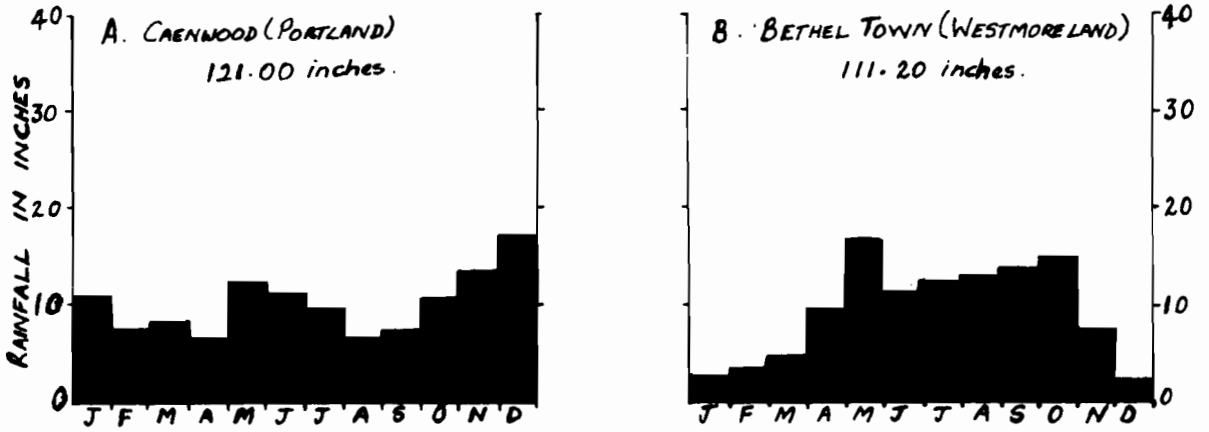
Zone I includes the northeastern part of the island, the Cockpit Country, parts of Hanover and Westmoreland, with the greatest concentration of rainfall occurring in the Blue Mountains. Orographic processes account for most of the rainfall in the Blue Mountains where the highest peaks are almost always covered with heavy cumulus clouds (James, 1959, p. 814). Zone II comprises that part of the North Coast from Port Maris to Morant Point and the central interior ridges. The region of low rainfall, Zone III, extends along the southern coast from

Bull Bay to Black River. The narrow strip between Discovery Bay and Montego Bay should also be included. The dryness of this narrow strip on the North coast is manifested in the type of vegetation which can be seen there; i.e., scrub savanna with very low grass, cactus plants and dwarf trees. In the rest of this zone the vegetation is generally low scrub. Sisal, a true indication of low rainfall, flourishes in the area. The part of this zone in the south, particularly the eastern parishes, illustrates well the rain-shadow concept. The Blue Mountains lie directly across the path of the North East Trades which are forced to rise when they encounter the mountains. Depositing their moisture on the windward slopes and at the top of the mountains, the winds have little moisture left for the south. Port Antonio, on the windward side of the Blue Mountains, receives 17 inches of rain in November, whereas Kingston, situated on the south side in the shadow of the mountains, receives only 7 inches. Agriculture in this zone cannot be practised successfully without irrigation.

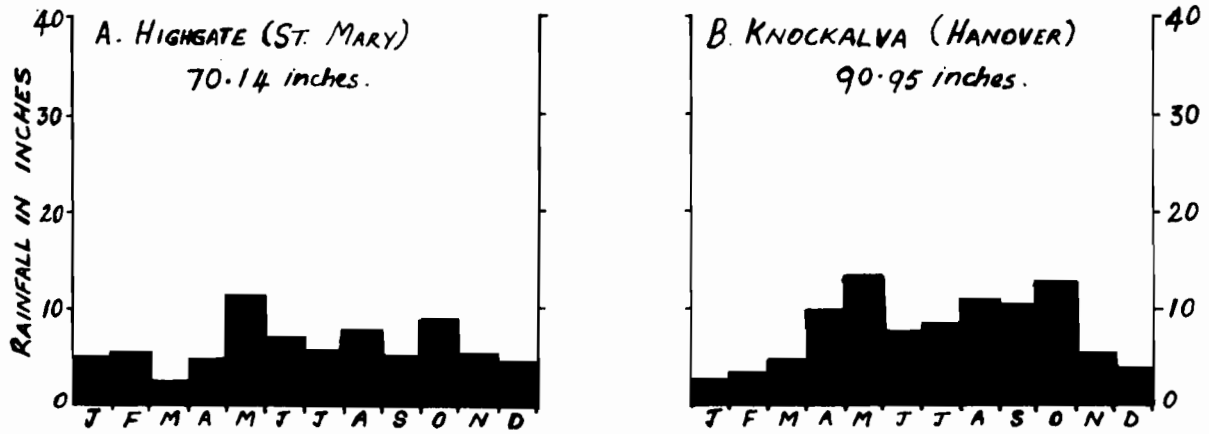
A look at the annual rainfall graphs in Figure 5 reveals two seasons of high rainfall, most easily discernible in the graphs for Zones II and III. The first

RAINFALL GRAPHS OF SELECTED STATIONS

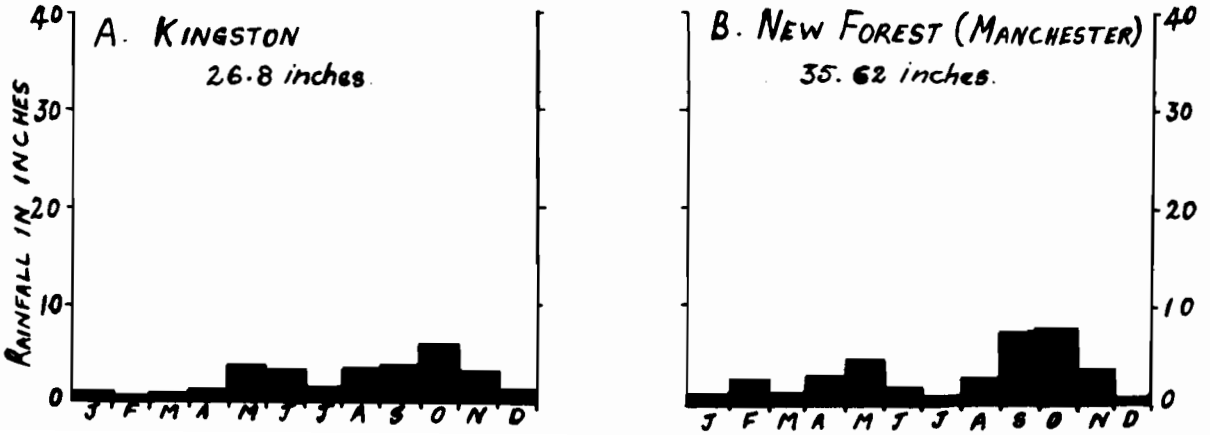
ZONE I



ZONE II



ZONE III



occurs in May - June, and the second between August and November. The May - June maximum is a result of increased convective activity associated with the passage of the sun over the Tropic of Cancer. The August - November rainfall is due to the passage of easterly waves of low pressure storms which sometimes intensify to become full-scale hurricanes. Convective activity accounts in part for the rain during this season, especially in August, but the easterly waves continue to influence precipitation between September and November. The island lies close to the zone of the highly developed storms crossing the Caribbean, and during the months from August to November there is a possibility that one of these storms may strike. Fortunately for Jamaica, in the past 310 years (1655-1965) only thirty hurricanes have struck the island. Much damage occurs when a hurricane strikes, and large quantities of bananas and coconuts as well as other crops, have been destroyed by the heavy winds and torrential rains which usually accompany a hurricane.

Geology and Soils

The geological structure of Jamaica has given rise to a wide variety of soil types which, combined with local climatic conditions, encourages diversity in

FIGURE 6


JAMAICA
Soil Distribution
N
LEGEND
Soils derived from shales, conglomerates, tuffs or igneous material - mainly clay on steep easily eroded slopes
Brown to dark brown soils on rocky limestone hills and intervening poljes
Terra Rossa (red) soils on gentle slopes - bauxite deposits in deep pockets
Red soils in narrow valleys and sinks of the Cockpit Country - rocky limestone hills
Recent alluvials on plains and river valleys
Old alluvials - interior basins with gentle to moderate slopes
Old marine clays (saline) imperfectly drained plains
Swamplands
C A R I B B E A N S E A
78°00'
77°30'
77°00'
76°30'
18°30'
18°15'
18°00'
17°45'
SCALE OF MILES
10 5 0 10 20 30 40 50 60

the types of crops grown. An important characteristic of the distribution of soils in the island is the high degree of variation which may occur in any given area. At least eighty different soil types have been recognised. Figure 6, a very simplified version of the soil association map of Jamaica, shows the broad distribution of soils with some indication of their topographic position and relationship to geologic structure.

Three main soil groupings can be distinguished - (a) the Alluvials (old and recent); (b) the Limestone series and (d) the Shales (basement and intrusive igneous series).

(a) The Alluvials

Rich in potash and phosphate, light, well-drained and fertile, the Alluvials are the most significant soils agriculturally. They are comprised of:

(i) The older river alluvia, known to extend from the Yallahs River to the Vere Plains in Clarendon, which are heavy soils requiring irrigation in regions of low rainfall. Saline soils derived from marine clays should also be included in this group, but they are unsuitable for agricultural use because of their salinity which has to be washed out before crops can be grown.

(ii) "Old Inland Basins" occur in the Bog Walk area and Worthy Park in St. Catherine, in Westmoreland, Trelawny and on the inland plains of St. Elizabeth. These degraded limestones are clayey and acid in reaction. They have very low fertility and require heavy liming.

(iii) The recent Alluvials found at the mouths of most of the island's larger rivers are the most fertile soils in Jamaica.

(b) The limestone series of which there are three types: (i) the red earths, (ii) marls and soft white limestone soils, and (iii) yellow limestone soils - have the largest distribution.

(i) The red earths (Terra Rossa) found in Manchester, St. Ann, Bull Savannah and Pedro Plains in St. Elizabeth, Montpelier area in St. James, and in parts of St. Catherine, contain iron and aluminium oxide. These are the "bauxite soils" which have been mined since the early 1950's. Their lightness and poor water-holding capacity are a handicap to successful farming and cultivation tends to reduce accumulated organic matter rapidly.

(ii) The marl and white limestone soils are very shallow, having only about three to six inches of topsoil on the parent material - marl. As a result of shallowness, these soils are almost entirely unsuitable for cultivation. Marl quarries provide an important source of income for people in the parishes where these soils occur, as marl is widely used as a building material.

(iii) The yellow limestone soils, sometimes referred to as the Cambridge beds, occur around Cambridge (St. James), in St. Mary and fringe the inland basins of Westmoreland and Trelawny. These soils are alkaline in reaction and drainage is often difficult.

(c) The shales

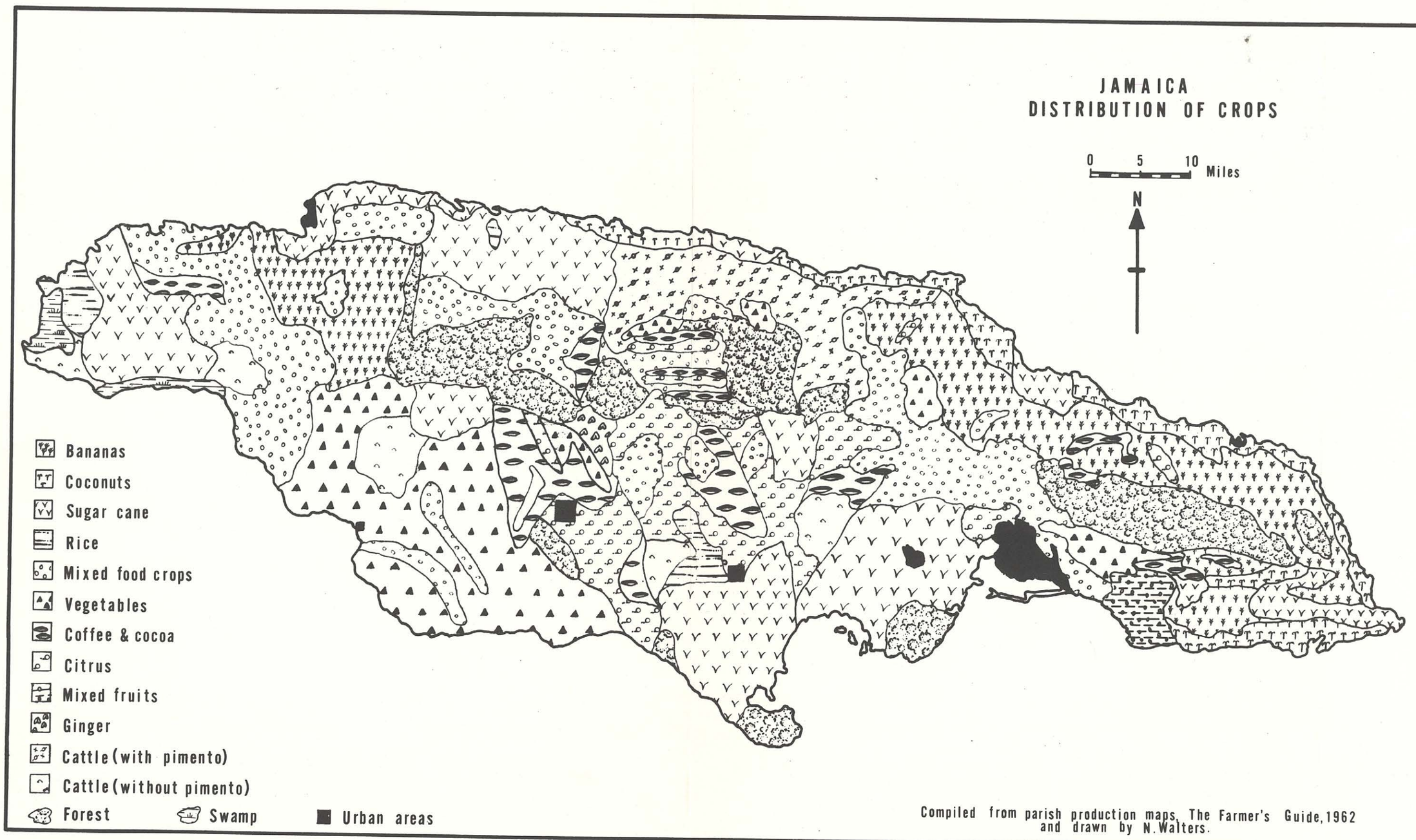
The varied soils of the Shale series occur in the geologically complex eastern section of the island and in parts of Hanover and Westmoreland, in the interior mountain range region. Developed on igneous parent material, some of these soils such as the carbonaceous shales and purple conflomerates, have a high natural fertility. The shales weather quickly; therefore soil conservation practices are essential to encourage accumulation. Fertility on the Trappean shales, sandstones and conglomerates

is low and the soils acid, but coffee and cocoa (cacao) will produce satisfactorily on them. The granodiorites and quartzitic soils are the poorest in the group.

> The landscape is broken into a series of steep-sided, knife-edged ridges, and in their present state the soils are of little agricultural value. They are greyish to brown in colour, very acid, possessed of no 'body' and infertile. (The Farmer's Guide, 1962; p. 79)

Although the physical environment of Jamaica has given rise to many problems evident in its agricultural development, yet the very nature of this environment offers many possibilities as far as the cultivation of crops is concerned. Figure 7 is a broad representation of the crop distribution across the island; but this is only a partial picture. Local differences become increasingly obvious as one travels from place to place, so that although Jamaica is in the warm latitudes and concentrates on the production of Tropical crops, mid-latitude crops may also be cultivated in regions of higher altitude - e.g. peach and strawberry production in the Newcastle area (St. Andrew), 4,000 feet above sea level; and the growing of vegetables - lettuce, tomatoes, carrots and potatoes in the Bamboo area (St. Ann). (See Figure 7). In other words, as well as horizontal variation of physical condi-

FIGURE 7


JAMAICA
DISTRIBUTION OF CROPS
0 5 10 Miles
N
Bananas
Coconuts
Sugar cane
Rice
Mixed food crops
Vegetables
Coffee & cocoa
Citrus
Mixed fruits
Ginger
Cattle (with pimento)
Cattle (without pimento)
Forest
Swamp
Urban areas
Compiled from parish production maps, The Farmer's Guide, 1962 and drawn by N. Walters.

tions, there exists a vertical zonation which must be considered as basic to agricultural planning. Therefore, agricultural development, and more specifically Land Settlement, should exploit the ecological conditions emanating from the interaction of the relief, climate and soils which has produced a remarkable physical diversity within a relatively small area.

CHAPTER III

HISTORICAL DEVELOPMENT TO 1938

Max Sorre has pointed out that historical explanation has an important role to play in the field of human geography. He says that

> Within the group of natural and social sciences -- to which human geography belongs -- we use two types of explanation which are not opposed, but complementary. Whatever the observed phenomenon may be, it is recorded in a temporal series, it is the result of a long evolution, and it is explained by a series of anterior states. (Sorre, 1962, p.44)

The statement that human geographic phenomena must be viewed historically and in a spatial context is applicable to Jamaica, for the historical record of its development elucidates geographical relationships within the island.

"Jamaica cannot be understood without recalling the outline of her history," said Katrin Norris in her book, Jamaica - the search for an identity (1962). Similarly, E. Paget has stated that

> In assessing the use made of this land by successive human occupants the value of historical evidence is clear as the only means of interpreting contemporary distributions. (Paget, 1956, p. 196)

Therefore, this chapter will examine the different eras in the history of Jamaica, emphasizing more particularly those pertaining to the present agricultural patterns and Land Settlement. These periods will be dealt with chronologically, with a brief look at the Spanish occupation. The plantation period, because of its relevance to the present situation, will be studied at greater length.

The Spanish Occupation

The few survivals of this period include names of some rivers and towns, e.g. Rio Minho, Rio Cobre and Seville. Certain cultivated crops such as cassava, corn (maize), and livestock rearing also date back to this period.

The Spaniards first landed on the island's North Coast in 1494, when Columbus put his battered ships into harbour at Seville (near St. Ann's Bay) for repairs and to find supplies for his starving crew. The only occupants of the island at that time were the Arawak Indians, a peace-loving group of hunters and agriculturalists. The efforts of the Spaniards to enslave them proved disastrous, so that by 1600 they were almost completely wiped out. Many of them died in bondage, and some committed suicide and killed their children rather than be enslaved.

Negroes were brought from Africa to replace the frail Arawaks, providing labour for the Spanish estates (Roberts, 1957).

Spanish colonization actually did not begin until 1510, some fifteen years after the first landing, as there were no exploitable minerals in the island. Jamaica became a supply base for the troops of the other Spanish colonies in the Caribbean and mainland South America. Sugar, pimento, cacao and indigo were grown for export (Gordon, 1955), all except indigo still play an important role in the economy of the island.

Several factors precluded successful colonization by the Spanish. First of all, some of the areas chosen for settlement proved to be unhealthy, and many of the colonists emigrated to South America. The capital of the island was moved from Seville on the North Coast to St. Jago de la Vega on the South Coast (now known as Spanish Town). By the time this move was made there were few Spaniards left, and these succumbed easily to the onslaught of the British who invaded the island in the 1650's.

The English period of colonization

Spanish settlement came to an end in 1655, when the English conquered the island. During the early years

of British settlement, the colonists concentrated in former Spanish towns, but later, as grants of land were made to the soldiers in other parts of the island, the population spread over a wider geographical area. Colonists were encouraged to come from other islands such as Barbados, to settle in Jamaica. At the end of the 17th century some form of land settlement was organized. These lands were plantation lands earmarked for the purpose of settlement. Each family participating in the scheme received up to 100 acres of land and one year's supply of provisions until they were firmly settled. However, these schemes were unsuccessful as many of the settlers found it difficult to adjust to life in Jamaica (Roberts, 1957).

Plantation Era

The eighteenth century heralded a new age in the history of the island. Large plantations growing sugar cane for export rapidly replaced settlements comprised of small holders. Unskilled, cheap labour was available - the British at this time monopolised the slave trade - and sugar dominated the British market (Eisner, 1961). These factors encouraged the population to invest heavily in sugar which continued as the base of the island's economy for a very long time to come.

Sugar plantations occupied the best land, with a heavy concentration on the alluvial plains near the coast and in river valleys and interior basins. This geographical distribution is significant, because it has determined the characteristic pattern of crop distribution in Jamaica at the present time. There was no peasant sector at this stage and the interior of the island was empty except for the "Maroons", slaves who had escaped to the hills during the Spanish occupation. The "Maroons" harrassed the planters constantly, raiding the plantations and sometimes burning them to the ground. They could not be subdued by the British soldiers who were at a disadvantage, not knowing the mountains as well as did the Maroons. But the situation was finally remedied in the latter part of the eighteenth century with the signing of a Peace Treaty between the Maroons and the Government.

Slaves on the sugar plantations were allowed to have small plots of land on which to grow ground provisions. This plot came to be known as the "mountain" (Cumper, 1950) and the type of agriculture practised by many Jamaican small farmers today evolved from this ground provision system. Curtin describes the situation

thus:-

> At a distance from the great house and the bookkeeper's barracks was the Negro village. This was laid out along irregular paths, each Negro or couple having a small piece of land, probably less than a quarter of an acre, and a hut of his own construction surrounded by trees - mango and coconut, ackee and breadfruit. The trees improved the appearance of the village, but this was not their purpose. The slaves had to grow most of their own food in their spare time - that is, after plantation hours, on Sundays and on alternate Saturdays outside of "crop". They were allowed to use almost any uncultivated land they needed for this purpose, in addition to their allotments in the village. (Curtin, 1955; p. 18) (1)

A look at the eighteenth and early nineteenth centuries in Jamaica finds an economy dominated by one export crop - sugar. Eisner (1961) points out that the planters found it cheaper to import food crops, and much more profitable to produce export crops. Root crops - yams, cocoes and sweet potatoes - grown by the slaves in "mountain" plots were the exception to this general rule. Only 29% of the total agricultural output was produced for the home market, and of this, 27% consisted of the above mentioned root crops (Eisner, 1961; p. 168).

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(1) Curtin further states that this was a system peculiar to Jamaica. He says that "it developed a backlog of training and experience in the cultivation of root and tree crops, in the management of provision grounds, and in marketing, and it developed a familiar and desirable alternative to work on the estates." (p. 112)

The situation remained unchanged until after Emancipation, which brought about a change in the pattern of production, as well as the geographical distribution of population. The slaves became independent settlers after Emancipation, and a new group of small proprietors developed.

Emancipation and after

As has been stated, Emancipation in 1834 heralded significant changes in the Jamaica economy. Sugar production declined and the Negroes began to move away from the estates. In order to keep a labour supply on the plantations, the Apprenticeship Law was enacted. It stipulated that a man had to serve as an apprentice on an estate for a period for six years, after which he was free to leave. Roberts (1957) tells us that numerous restrictions were placed on the apprentices who suffered many injustices as a result. Gisela Eisner (1961) also records this fact, and states further that the Apprenticeship Law was so badly implemented that it had to be terminated in 1838 without completing its full term. Following this, there was a general exodus of labourers from the plantation areas. The Negroes squatted on unutilized land (usually Crown Lands) in the hilly interior and pursued their "mountain"

cultivation (Curtin, 1950). Cumper said that the

> Post-emancipation movement took place in two steps; first the removal of the estate population to the neighbouring hill areas which were already partly cultivated under the provision ground system and then the exploitation of the interior beyond these limits.
> (Cumper, 1950; p. 274)

With money that had been saved during the Apprenticeship period, some of the ex-slaves purchased small holdings (Roberts, 1957). A few of the estate owners were willing at the end of the Apprenticeship period, to sell or rent lands to the freed slaves in order to keep a supply of labourers close to the plantation, but this measure did little to arrest the departure to the hills as most of the Negroes were unwilling to have further contact with the sugar estates which to them represented a "badge of slavery" (Curtin, 1955).

Growth of the peasantry

Eisner has said that

> ... with emancipation the small cultivator, who had been completely ousted by the slave-owning planters already in the early part of the eighteenth century, re-appeared in the Jamaican economy. Unlike his predecessor, however, the new landowner was not European, but mainly an emancipated slave."
> (Eisner, 1961; p.210)

Having left the estates it was necessary for the ex-slaves to acquire land on which they could continue to cultivate ground provisions as a means of self-support. A large number of them settled on unoccupied portions of sugar plantations, on land belonging to absentee owners, or else moved into the more inaccessible, marginal lands of the interior which were unsuited to sugar production, and engaged in subsistence farming. Gordon made the following observation:

> It was then that the full force of the African system of agriculture was brought to bear on the island. Strange enough, the Government made no attempt to help them nor to direct the settlements. Some were indebted to the generosity of their former masters who granted small plots to certain faithful slaves. Others squatted wherever they could find land .... These marginal lands could not stand up to their poor methods of farming. As one patch became impoverished they moved off to another, destroying in a short time the most valuable stands of timber. Erosion, however, was not to become a serious problem until the present century.
> (Gordon, 1955; p. 65)

Baptist, Weslyan Methodists, and Scottish missionaries were instrumental in organizing settlements. This arose from a need to keep their congregations together, for the freed slaves took to the hills at the first opportunity. Land was acquired by purchase, then

divided into small plots and resold to the peasants. William Morris Knibb, a Baptist missionary, was very active in the establishment of settlements, the first of which (Sligoville) was founded in the hills behind Spanish Town in 1835. He continued to purchase land in the years following, dividing the properties into one to three acre lots for resale. Knibb actually envisaged communities of small villages distributed throughout the island under a system of settlement which became known later as the "Free Village System". By 1840 there were approximately 150 to 200 villages having a total area of 100,000 acres (Eisner, 1961). But after Knibb's death in 1841, there was no one to carry on his work, and the growth of free peasant villages was discontinued.

The majority of planters deplored the independent settlement of the Negroes, and did everything in their power to discourage the movement, because they felt that there could be no satisfactory alternative to plantation agriculture in the Tropics. Curtin (1955) has said that the Jamaican planter after Emancipation

> ... was wedded to estate production by sentiment and interest, and he was ready to go on and buttress his position with rational justification. (Curtin, 1955; p. 117).

All their attempts failed, and soon a number of estates were abandoned, continuing the trend that started with the decline of sugar on the British market - Jamaican sugar no longer enjoyed a tariff advantage in Britain. Thus,

> ... the number of plantations dwindled from more than five hundred to no more than seventy at the beginning of the 20th century. (Norris, 1962; p. 6)

Most of the abandoned estates proved ideal for the Negro peasant, who felt that he had a right to land which was not being utilized. Those who did not buy land, squatted on the abandoned plantations where they cultivated ground provisions and vegetables, finding a market for surplus production among the wage labourers still on the estates, and the town dwellers. But with the decline of the estates, the peasants had to face a lean period or else find some substitute way of earning a living. Thus they were forced to produce such export crops as coffee, logwood, arrowroot, fustic, beeswax, honey and coconuts (Eisner, 1961).

The rapidly growing peasant class increased fragmentation of land, as the available land was limited, and an ever increasing sector of unemployed labourers began to create social unrest among the peasantry; a

condition which culminated in the Morant Bay rebellion in 1865. The rebellion, led by a peasant proprietor, Paul Bogle, was shortlived and Bogle was hanged, but it helped to prod the Home Government into awareness of the critical situation existing among the Jamaican peasants, and prompted them to offer concrete solutions to the problem. Efforts were made to improve communications, health and education, and the problem of land tenure was also tackled by the Crown Colony Government established in that year.

Early Government attempts at land settlement

Peasant expansion was actively encouraged after 1865, and in 1867, Sir J.P. Grant, then Governor of Jamaica, set up a Lands Department whose responsibility it was to investigate all the land holdings of doubtful tenure. He also introduced legislation in an attempt to retrieve all the lands which were in unlawful possession. By 1877, 29,925 acres had been recovered from squatters and subsequently re-rented on a seven year lease (Eisner, 1961). Renting land proved unsuccessful as payments were frequently allowed to lapse, but most significant of all, it led to a very destructive use of land.

Peasants employed such careless methods that soil exhaustion and erosion became widespread - a feature of peasant agriculture which has persisted to the present time.

Another Governor, Sir Henry Blake, in 1895 devised a scheme for the disposal of Crown Lands, whereby peasants could buy plots ranging in size from 5 to 50 acres. One-fifth of the purchase price was paid at the outset, the remainder being paid over a 10-year period, interest free. The purchaser was required to develop the land by planting permanent crops or risk forfeiture if the development was not carried out satisfactorily. This scheme elicited favourable response from the populace, and between 1902 and 1903, 1,889 people took advantage of the scheme purchasing a total of $20,088\frac{1}{2}$ acres. By 1909 however, interest seemed to waver and there was a large number of forfeitures - amounting to approximately 9,000 acres. Between 1909 and 1911, new lands were opened for settlement under the scheme, but the response was disappointing, as the only land available was marginal to cultivation. Agricultural Loan Banks established in 1920 were given powers and funds to purchase suitable land for resale to small settlers. Under this new arrangement, 14,283 acres were purchased from 1920 to

1926 for resettlement. The following table lists the settlements established during the period 1923-1930.

Table III-1

Land Settlement Schemes, 1923-1930

Year	Location	Acreage
1923	Spring Gardens, St. Thomas	746 acres
1929	Kellits, Clarendon	5,065 acres
1930	Tobolski, St. Ann	2,050 acres
	Monklands, St. Thomas	1,500 acres

(Source: Gisela Eisner, Jamaica 1830-1930)

Despite these efforts at providing the peasantry with land on which to grow food crops, conditions grew steadily worse. Inherent in the growth of the peasantry were several problems for which there seemed to be no immediate solution.

Problems encountered in early land settlement

One of the most important problems that had to be faced was the lack of good land for peasant settlement. Most of the land available to the Government was very poor, due to the fact that the best land was already occupied by the large plantations, and even abandoned plantations had been repossessed by owners or expropriated by the Government and allotted for settlement. That the

peasant population was increasing far more rapidly than land could be made available was another area of great concern. Table III-2, showing population growth between 1831 and 1943, and Table III-3, giving the amount of land under cultivation between 1880 and 1943, illustrate the situation very well.

The island's population increased by at least 30% between 1871 and 1911, and although the acreage under cultivation also increased, it was insufficient to satisfy the needs of the peasants. Consequently there was a great deal of fragmentation of the existing holdings. Labourers began to drift to parishes where banana was becoming important as a plantation crop - particularly Portland and St. Mary. The population of these two parishes doubled in the period. Poverty in the rural parishes led to a large-scale movement to the urban areas - with most of the people going to Kingston.

Another factor contributing to the difficulties of the peasants was the type of agricultural technology which they employed. Eisner (1961) sums up the situation in the following words:

Table III-2

Population of Jamaica by parishes, 1831, 1871 1911, 1943 and average annual rates of increase

Parish	Population				Av. Annual increase (%)		
	1831	1871	1911	1943	1831-71	1871-1911	1911-43
Kingston	33.0	34.3	59.7	110.1	0.10	1.84	2.64
St. Andrew	21.5	31.7	52.8	128.1	1.19	1.67	4.46
St. James	24.0	29.3	41.4	63.5	0.56	1.03	1.60
St. Catherine	34.0	54.0	88.1	121.0	1.47	1.58	1.17
Clarendon	26.1	42.7	73.9	123.5	1.59	1.82	2.10
Westmoreland	21.0	40.8	66.5	90.1	2.36	1.57	1.11
St. Thomas	27.7	32.7	39.3	60.7	0.45	0.51	1.69
Portland	23.4	25.3	49.4	60.7	0.20	2.38	0.72
St. Mary	26.9	36.5	73.0	90.9	0.89	2.50	0.77
St. Ann	27.2	39.5	70.7	96.2	1.13	1.96	1.13
Trelawny	26.7	28.8	35.5	47.5	0.20	0.58	1.06
Hanover	22.7	26.3	37.4	51.7	0.39	1.06	1.18
Manchester	18.9	38.9	65.2	92.7	2.64	1.69	1.32
St. Elizabeth	16.4	45.2	78.7	100.2	4.41	1.85	0.85
TOTAL	349.5	506.2	831.4	1237.1	1.12	1.60	1.49

Source: George Cumper, "Population Movements in Jamaica," 1830 - 1950. Social and Economic Studies, Vol. 5, No. 3, 1956, pp 261-280.

Table III-3

Acreage in Cultivation, by parishes, 1880-1943
Acreage (000's of acres)

Parish	1880	1911	1933	1943
St. Andrew	8.5	12.4	12.8	17.4
St. James	(6.3)	12.9	20.6	20.7
St. Catherine	16.9	45.4	34.9	45.9
Clarendon	12.3	25.5	37.3	57.0
Westmoreland	10.1	13.8	21.4	27.3
St. Thomas	9.5	20.2	31.0	45.7
Portland	4.3	21.4	21.1	32.1
St. Mary	5.4	47.0	48.3	54.7
St. Ann	7.0	10.2	25.7	36.3
Trelawny	8.3	12.3	35.9	21.4
Hanover	5.3	12.6	15.6	20.2
Manchester	9.8	16.0	19.6	22.7
St. Elizabeth	8.4	12.4	19.8	27.7
Total Jamaica	107.9	273.5	344.0	431.8

Source: Cumper, Op.cit.

> The traditional method of cultivation employed by the peasantry is usually described as 'firestick agriculture'. This involves the clearing of virgin land by burning followed by continuous planting, without rotation or artificial aids, until soil exhaustion or erosion reduced yields to such an extent that land had to be abandoned. While land was freely available the consequences could be avoided by moving on to fresh land but with increasing population this became increasingly difficult. (Eisner, 1961; p. 225)

Several ways of improving peasant agriculture were tried, including the establishment of Technical Schools in 1867, but these were unsuccessful. A travelling instructor was appointed in 1867 to assist the farmers by introducing improved agricultural methods. The Jamaica Agricultural Society, formed in 1895, was seen as a means of disseminating agricultural knowledge, but its activity was curtailed by lack of funds and shortage of trained personnel. Although this society conducted no research work, its chief value was to foster independence and self-help among the peasantry. A number of co-operatives were organized between 1927 and 1929 to take care of the marketing of several products such as bananas, fruits and vegetables, citrus, dairy products and pimento.

But as the population expanded there was growing pressure on the land, unemployment was rife as the sugar and banana estates went through another slump period, and the available land was insufficient to absorb the labour force. Norris (1962) states that throughout the years strong upper and middle classes developed in Jamaica, separated from the peasantry by an ever-widening gulf. She has given a very apt description of the situation in the following words:-

> Whilst the upper and middle classes were building an often strained imitation of Britain, the great Jamaican proletariat lived in another world, a world with its roots in Africa and slavery and deprivation. Little had happened in the intervening century to change the economic and social stature or the psychological habits connected with such a past. Emancipation had made 320,000 black slaves into citizens. Apart from this it left them to fend for themselves, with no property, limited practical skills, no education and not even the institution of family life. Many managed in time to come into possession of small-holdings and augmented the scanty living these provided by seasonal work during the sugar crop. The rest drifted on to the labour market and if they could get no farm, domestic, port or construction work, they either emigrated or remained unemployed. Much of the unemployment, especially of young people coming on the labour market for the first time and seeing little

> chance of work in their villages, centered around Kingston. These unemployed lived by 'scuffling' a share of the livelihood of friends or relatives. (Norris, 1962; p.11)

The figures show that between 1838 and 1938 "the peasant labouring class which constituted at least 80% of the population had tripled to the million mark "(loc. cit.). This group, accounting for 87% of the island's farmers, were concentrated on a mere 25% of the cultivated land - on plots less than five acres in size. The psychological attitude fostered among peasants living under such conditions had a detrimental effect on agriculture. It is no surprise that there was widespread social unrest and discontent, which finally found expression in a series of riots and labour disturbances in 1938.

These riots demonstrated once more to the Government the need for providing the peasantry with better opportunities for employment, particularly by relieving the pressure on the land. As a direct result of the disturbances, the Land Settlement Policy which provides the framework for the present Land Reform in Jamaica came into being.

CHAPTER IV

LAND SETTLEMENT SINCE 1938

There was little, if any, industrial development in 1938 to take care of the growing labouring class, which was largely illiterate and depended heavily on the banana and sugar plantations for employment. Furthermore, the numbers which could be absorbed on these estates were limited. Emigration, which alleviated the situation somewhat, had reached its peak in the years 1911-1921, when large numbers of people left for the United States, Costa Rica, Nicaragua, Panama and Cuba to find employment as farm workers or construction labourers. After 1921 the trend was reversed, and these people began to return in large numbers.

Nor did the rapid population growth help to improve conditions. During the period from 1921-1943, the island's population rose from 858,100 to 1,237,100 at a rate of 1.7% per year (Roberts, 1957. See also Tables III-2 and III-3). Movement to urban areas swelled to alarming proportions - alarming because the peasants from the rural areas were looking for jobs which did not exist. Cumper (1951) states that in the period 1939-43 the urban areas gained at least 7,000 people annually.

Kingston showed the greatest gain from internal migration. Between 1921 and 1943, the island's population increased by 72.8% and that of St. Andrew by 134.7%. Of the total resident population in Kingston in 1943, only 43.5% were born there, and only 49% of the population of St. Andrew were native to that parish. (Eisner, 1961).

It was obvious that the existing state of affairs should not be allowed to continue, especially after the riots. The continuous drain of manpower from the rural areas was detrimental to the social and economic development of those areas, and agriculture suffered a decline; but there was insufficient agricultural land to absorb the growing numbers, and little could be done to end the predicament unless some alternative means of gainful employment for the population could be found. For the authorities, the only practical solution at the time was to settle as many people as possible on the land since there was no industry to absorb the surplus labour.

The Lands Department

In 1938, the Agricultural services in Jamaica consisted of (a) the Department of Science and Agriculture, (b) the Jamaica Agricultural Society, and (c) the

Land Settlement Department. The Land Settlement Department was formed very soon after the 1938 riots, and its main purpose was

> to administer a hastily drawn up scheme for Land Settlement aimed at halting the growing trek of rural population to the city in search of jobs which did not in fact exist. The Schemes under which it was set up provided generous funds for acquisition of properties for settlement but did not make adequate provision for measures necessary to develop the settlements into stable communities of well planned, soundly developed economic units. (1)

Other functions of the Lands Department included acquisition, sub-division and allotment of lands on Land Settlement properties. Social and agricultural development on the schemes were also the responsibility of the Lands Department. As well as administering Land Settlement Schemes, the Lands Department supervised all government buildings and properties, including Crown Lands.

The hierarchy of personnel in the Lands Department is shown by Figure 8. For purposes of administration the island is divided into 4 regions - the Northern Division,

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(1) Ministry of Agriculture and Lands - Paper 72, p. 4. Underlining mine. The fact that Land Settlements were not considered at the outset to be the basis for agricultural development precluded true community solidarity on the schemes and did nothing to raise the standard of farming among small farmers.

FIGURE 8

ORGANIZATION OF PERSONNEL IN THE LANDS DEPARTMENT

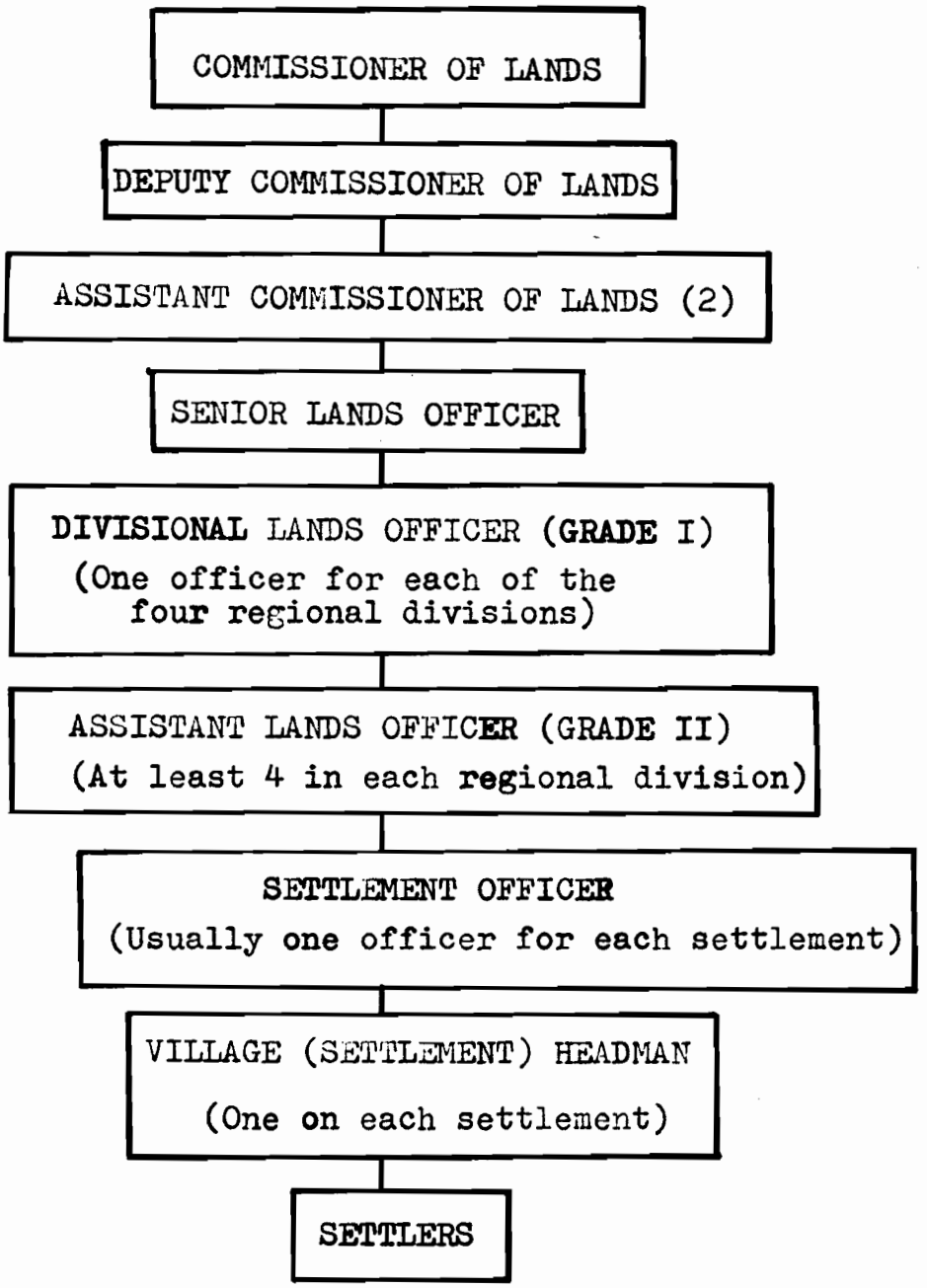
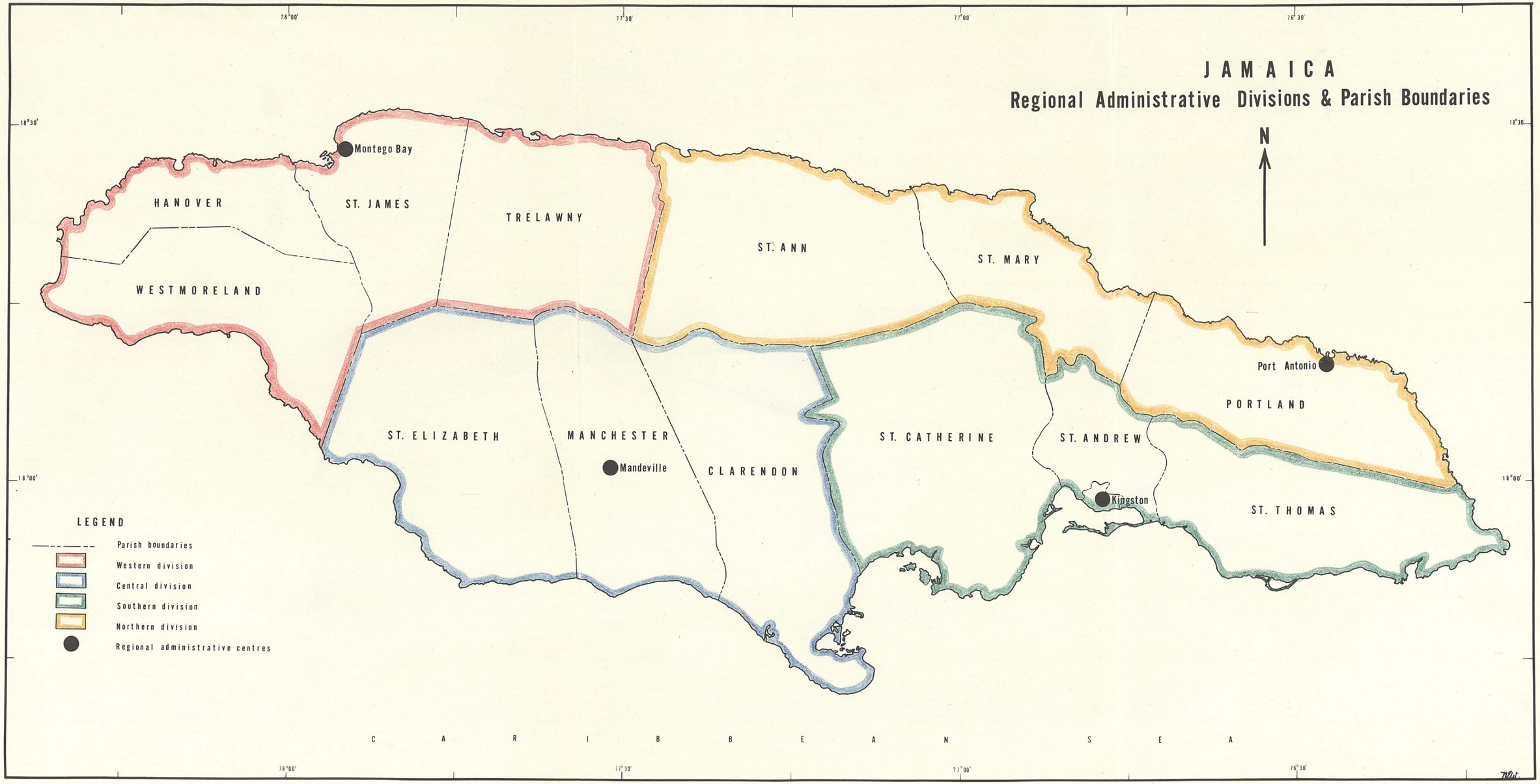


FIGURE 9


JAMAICA
Regional Administrative Divisions & Parish Boundaries
N
78°00'
77°30'
77°00'
76°30'
18°30'
18°00'
Montego Bay
HANOVER
ST. JAMES
TRELAWNY
ST. ANN
ST. MARY
WESTMORELAND
Port Antonio
PORTLAND
ST. ELIZABETH
MANCHESTER
Mandeville
CLARENDON
ST. CATHERINE
ST. ANDREW
Kingston
ST. THOMAS
LEGEND
Parish boundaries
Western division
Central division
Southern division
Northern division
Regional administrative centres
C A R I B B E A N S E A
SCALE OF MILES
10 5 0 10 20 30 40 50 60

which consists of the parishes of Portland, St. Mary and St. Ann; the Southern Division, Kingston and St. Andrew, St. Thomas, and St. Catherine; Central Division comprising the parishes of Manchester, Clarendon and St. Elizabeth; and the Western division which embraces the parishes of Westmoreland, Hanover, St. James and Trelawny (see Figure 9).

Each Divisional Lands Officer administers the affairs of the settlements in his region, assisted by Assistant Lands Officers and Settlement Officers. The Settlement Officer collects money from the allottees and is expected to be conversant with the problems of the settlers. He is also required to assume the role of agricultural advisor and social welfare worker, although this has been taken over largely by the Extension Services of the Ministry of Agriculture and Lands and the Jamaica Social Welfare Commission. The Settlement Officer must live on the settlement of which he is in charge, but frequently one officer has to manage more than one settlement. Therefore, the Property Headmen act as deputies for the Settlement Officers during their absence.

Land Settlement Policy in Jamaica

In order to understand the role of the Lands Department it is necessary to review the Jamaica Government's Land Settlement Policy since 1938. The historical account in Chapter III shows that the primary reasons for settlement in Jamaica after Emancipation was to give the peasants a feeling of security, and to provide them with some means of subsistence, since they were no longer willing to work on the plantations. Later, in 1938, Land Settlement was considered to be a good way of alleviating unemployment and halting the movement from rural to urban areas. A Royal Commission appointed to study economic conditions in the West Indies in the 1890's, made the recommendation that Land Settlement be used to relieve the acutely depressing situation of the peasants after the decline of the sugar industry. Abandoned estates should be used for settling unemployed labourers. "Following upon this suggestion," says Lewis (1951), "the settlement of small-holders on the land was pursued actively in Jamaica for the next thirty years. There was also some settlement in other islands, and in British Guiana, but nowhere was there as much activity as in Jamaica." (p. 58). In 1939, 33 settlements in-

volving 36,084 acres were established and in the following year 32 new schemes were organized.

Land Settlement continued for a number of years before any real attention was given to agricultural development. Consequently few limits were imposed on the activities of the settlers with regard to the techniques which they used, the types of crops grown, or the sub-division and re-sale of allotments. Widespread misuse of the land, shifting cultivation and other such harmful practices led to serious soil erosion, and fragmentation occurred at the whims of the allottee. Greater stress was laid on export crops than on crops grown for the domestic market, of which small farmers were the sole producers. The low level of agricultural output on the holdings did not justify the high costs of establishing the farms. Moreover, as Paget (1956) has observed, "since the turn of the century the number of small holdings has continued to increase, but not in proportion to increasing population." A similar opinion was voiced in the Report of the Agricultural Policy Committee of Jamaica (1945, p. 6), where the following statement regarding the land shortage and low level of

farming was made:

> ... it is a fact that the total available land is inadequate to meet the needs of the present population, under existing methods of use. Available land can only yield improved standards of living for the people by far-reaching reforms to raise the standard of farming efficiency.

The Committee further pointed out the need for an Agricultural Policy in which Land Settlement would play an active part.

However, it was not until the 1950's that the Government was willing to admit that perhaps Land Settlements were not in fact fulfilling any purpose other than providing security for peasant farmers, and that for them to be truly effective it was essential to incorporate the programme into plans for Agricultural Development.

Acquisition and preparation of the land settlement property

The Lands Department officers are careful to point out that Land Settlement Schemes are located where the need for them is greatest. There appear to be no hard and fast rules by which to evaluate need, but security of tenure is considered to be an important criterion for the establishment of a Land Settlement Scheme. Heavily tenanted properties may be acquired by the Lands Department at the request of the small farmers involved. Representa-

tions are made to the local member of Parliament who acts as the spokesman for the farmers, conveying their wishes to the Lands Department. Thus many of the estates which the Government acquired for Land Settlement were already fully rented to tenants in small lots. Usually these were unutilized portions of sugar estates, rented by the owners to the workers employed by the estates. Prospect Park and Camp Savannah in Westmoreland fall into this category (the properties were originally part of the West India Sugar Company estates) of lands unsuited to cane production, due to rough topography and unsuitable soil.

In 1943 several properties were acquired to provide relief work for unemployed labourers in certain parts of the island. These were later converted into Land Settlement Schemes. Dover (St. Mary) and Caenwood (Portland) are two of the Schemes which started as relief properties.

Private property owners sometimes offer land to the Government for the establishment of Settlement Schemes. Frequently however, this land may be marginal to crop cultivation, or else only a small percentage of the area can be profitably used for farming. Such land has been accepted by the Lands Department, and although

it is inadvisable to make a definite statement, it appears that politics has a significant part to play in these decisions.

Before acquisition, the Land Department carries out a preliminary inspection of the land. If, after inspection, the land is considered satisfactory, final plans are made for purchase and payment (made either in cash or by Land Bonds). A Land Valuation Officer surveys the property in order to determine the price which should be asked for the lots, after which the roads are laid out and the settlement subdivided into allotments of a predetermined size.

The installation of public amenities - water, roads, community centre and other such facilities - should naturally precede allotment to settlers. Lewis (1951) and the Agricultural Policy Committee (1945) have both emphasized this point. Lewis commented on the fact that insufficient expenditure on projects such as general soil conservation works, erecting community buildings, installing water supplies etc., results in inadequate and inferior amenities. He said that

> Much of the failure of land settlement in the West Indies has been due to the failure of governments to realise that a great deal of capital must be spent

> on making land ready for settlement, and that the sum required for this purpose is often several times the sum required for buying the land. The legislation of Jamaica has conspicuously failed to recognize this; it is always willing to make grants to buy land, but makes only meagre and grudging provision of funds for putting the land into a state fit for settlement. (Lewis, 1951; p. 81)

The following figures on expenditure in connection with Land Settlements support the above statement. The National Plan for Jamaica 1957-1967 allocated £5,000,000[1] for land purchase and development during that period. Under this plan £100,000 would be spent per year through the Land Settlement Fund, a total of £1,000,000 over ten years. According to Lands Department figures, expenditure on Land Settlements since the inception of the programme to December 31, 1960 amounted to £1,787,563. This figure applies to both acquisition and development costs. Under the Five Year Independence Plan for 1963-1968, the expenditure for land settlement was as follows: Between 1963 and 1964 money spent on acquisition of land for settlement was £160,000, and £200,000 was spend for development. After 1964 the proposed acquisition

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1. £1 is equivalent to $2.80 (U.S.) or $3.08 (Can.).

costs were supposed to total £252,000 and development capital would amount to £3,339,000. From these figures it is clear that the government realizes the large capital outlay required to develop a settlement before it is fit for occupation. However, it would appear that the Land Settlement Programme at the present time is suffering from lack of careful and detailed planning with regard to the expenses involved.

For instance, road building requires large capital expenditure. On Rhymesbury settlement (Clarendon), although the land is comparatively flat, roads were constructed at a cost of £30,000 per mile; and with 13 $\frac{1}{2}$ miles of driving roads constructed the total cost was £405,000. The cost per mile for road building on Pennants (Clarendon) was estimated at £14,000. These figures are indicative of the amount of money needed for proper construction of roads on each settlement, although of course, conditions differ on each settlement. Good driving roads are essential on settlements and each allotment must have reasonable access to those roads. However, few good driving roads have been constructed because of insufficient capital, and those existing are in poor condition. Inadequate water sup-

plies also bear testimony to the small grants that have been made for public amenities, as well as to the necessity for detailed planning and estimates of the water requirements on each settlement scheme.

Selection of settlers

After the property has been declared open for settlement, any person wishing to purchase an allotment must make application to the Commissioner of Lands stating the number of the lot which he has chosen. These applications are processed by a special committee which will notify the applicant of acceptance or refusal. No clear statement has been made regarding the qualifications necessary for participation in a Land Settlement Scheme. It would appear that applications are dealt with on a "first come-first served" basis, and not on the prospective settler's farming ability. Recommendations by the Agricultural Policy Committee (1945) stipulated that each settler should be carefully investigated giving particular attention to his background. Lewis felt that settlers should be bona fide farmers, not merely unemployed labourers.

> It is least recognised in Jamaica, where men are settled on the land in order of their application. Even on the Lucky Hill Settlement, which is Jamaica's approach towards co-operative farming, recruitment is haphazard, although the success of this type of farming obviously demands the most careful choice of settlers. (Lewis, op.cit., p. 80)

Dumont (1963) expressed a similar opinion when he criticized the haphazard selection of settlers. He felt that it hampered the development of a settlement as an improved producer of food crops. Jamaica could learn a great deal from the Puerto Rican System of selection of settlers for family farms. They are selected on the basis of the ability of the family to manage and improve the farm (Santos, 1963). One way of ensuring increased agricultural production on Land Settlements is to revise the policy of selection of settlers. People should not simply be accepted on the basis of their ability to pay for the land, but all applicants should be carefully screened and examined in connection with their farming background, in order to satisfy the selection committee of willingness to meet all the conditions of settlement.

Conditions of Occupancy

On being accepted as a settler, the farmer is required to pay one-twentieth of the cost of the land. The balance is paid in fifty half-yearly instalments over a period of twenty-five years. Until the farmer completes payments on his holding, he may not sell, sub-let or transfer ownership without the consent of the Commissioner of Lands. He is expected to execute any conservation works stipulated by the Ministry of Agriculture and Lands and develop the land to the satisfaction of the Ministry's Extension Officers. If he does not comply with the rules, the farmer may forfeit the right to remain on the settlement. Forfeitures have occurred mainly because of non-payment for holdings, but in most cases the Lands Department is lenient about forfeitures and frequently holds the land until the settler can find money to pay the arrears.

No stipulation is made about living on the holding, with the result that many farmers reside some miles from the settlement in the nearest town and visit their holdings once or twice each week. Rowlandsfield (St. Thomas), Rhymesbury (Clarendon), Hyde and Gibraltar

(Trelawny), Ducketts (St. James), and Bath Pen (Westmoreland), fall into this category. Without a resident population there is no social stability, and hence agricultural development is seriously handicapped as settlers are not available for any instructions on farming methods which may be given by the Extension Officers.

Absentee proprietorship, described above, reflects the attitudes of many participants in Settlement Schemes. Unwillingness to develop the holding is another deterrent to agricultural progress. Inertia about the types of crops best suited to an area is widespread. Settlers prefer to cultivate crops which they have produced previously despite the advice of the Extension Officers - an attitude termed 'born come see' by Edwards (1961). Some farmers regard the land as a security ticket, and as long as they get returns from it without too much effort, they are satisfied. This is a common attitude among ex-servicemen who were settled on the land under a different arrangement from that described previously.

Ex-servicemen settlements

Settlement of ex-servicemen commenced in 1946 as a means of re-establishing veterans of World Wars I

and II. Under this scheme, the ex-servicemen received a number of grants to assist them in setting up farms. They were given:

(a) a rebate of 25% of the cost of the land allotted to them;

(b) a rebate of 33 $\frac{1}{3}$% of the cost of a house;

(c) free grant of Ł5 for the purchase of agricultural tools;

(d) free grant of Ł25 for the purchase of livestock;

(e) a subsistence allowance of Ł1 per week for 6 months, until the allotment started to produce, and on the condition that the grantee did work to the equivalent of the grant.(1)

Since 1946, 1,925 ex-servicemen have been settled on 12,255 acres. Unfortunately, few possessed any knowledge of farming, therefore could do little to improve the land. In addition, a large number of veterans felt that the government owed them more, and refused to pay for the land. Many of them accepted the grants as a form of security with little desire to farm the land. Ex-servicemen are the "bêtes - noires" of the Lands Department and many land settlement officers complain of their lack of interest in the land. The result has been

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(1) "Land tenure in the Caribbean," Caribbean Economic Review, Vol. II no. 2, November, 1950

widespread abandonment and/or forfeiture. Some of these ex-soldiers have left their holdings in the hands of tenants, or have simply sold out and left the area. Examples of the difficulty of incorporating the ex-servicemen into the land settlement community can be quoted from almost any settlement on which they have been settled. On the Grange Hill settlement in Portland, reluctance to adopt general conservation methods recommended by the Settlement Officer, and even to tend their crops, is outstanding. A similar situation exists in Kildare (Portland), where, of the 95 ex-servicemen originally settled, only 15 remain.

The prevailing attitude among these settlers has been to obtain as much as possible from the land without having to work it. On the other side of the coin however, are the veterans who have taken farming seriously and have been successful - exemplified by the ex-servicemen in New Ground, St. Ann.

Co-operative or community settlements

Relatively few attempts have been made to establish settlements based on co-operative or community effort. There are two settlements of this type in opera-

tion in Jamaica at the present time - Lucky Hill (St. Mary) and Grove Farm (St. Catherine). Two other experimental co-operative farms were established at Rhymesbury (Clarendon) and Goshen (St. Elizabeth) to investigate the possibility of creating settlements organized on a co-operative basis if they were suited to Jamaican conditions. However, the Rhymesbury co-operative failed because of the lack of participants in the programme.

The Lucky Hill project was the first of its kind in Jamaica, and indeed in the British West Indies. It was started in 1940 with a total area of 873 acres. Created with the objective of introducing the agricultural worker to estate-scale agriculture and of training the small farmer in farm management, the holdings were leased rather than sold to the participants. The scheme operated as a unit, but each participant had a say in its management and a financial interest in the operation of the project (Wright, 1947). A settler's council selected members for the co-operative. Other aims of the scheme were to create a stable community; to develop initiative and encourage self-help among the participants by education and training in improved techniques; to foster a co-operative spirit in both social and agricultural activities; to increase efficient land utilization and to assess the

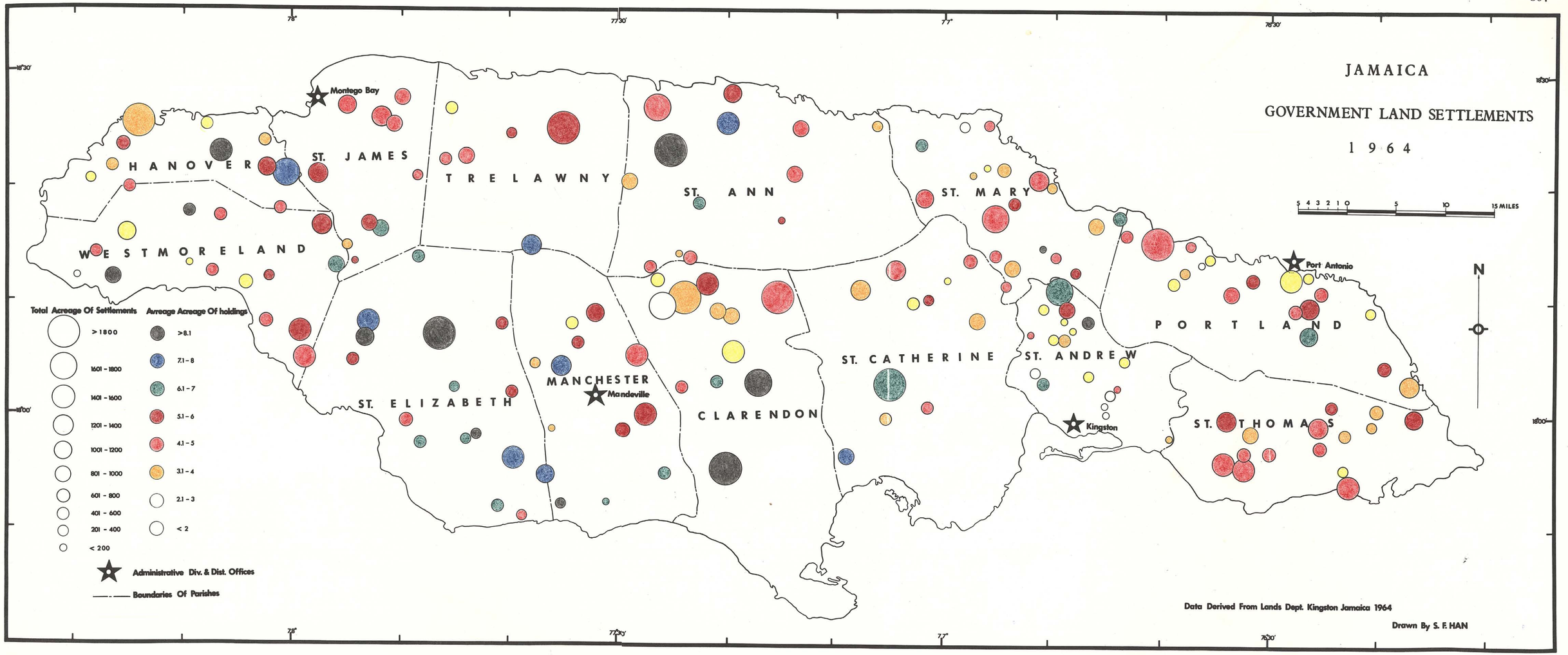
value and practicability of leasehold tenure in the Jamaican context.

The number of co-operatives has not increased, and it would appear that this type of organization is unsuitable for Jamaican conditions. Jamaicans prefer to own land rather than to rent or lease, an attitude which is a propos of the land hunger which prevails, and which must be given every consideration when planning Land Settlement policies. Lowenthal (1961) has commented on the fact that possession of land is a symbol of freedom and independence. Dumont (1963) has also stated that this attitude resulted in fragmentation and misuse of the land. The IBRD report (1952) stated that

> Land is the most coveted possession. Ever since the days of slavery, it has been regarded as a guarantee of individual freedom and as a form of insurance against want. (IBRD Report p. 13)

Parsons (1963) felt that the small farmer would not be satisfied with less than a "significant hold on the land", a statement borne out by the observations on social attitudes to the land in Jamaica. It would appear therefore, that freehold tenure or long-term lease with security assured is perhaps the best system for Jamaican conditions.

FIGURE 10


JAMAICA
GOVERNMENT LAND SETTLEMENTS
1 9 6 4
Montego Bay
HANOVER
ST. JAMES
TRELAWNY
ST. ANN
ST. MARY
WESTMORELAND
Port Antonio
PORTLAND
ST. CATHERINE
ST. ANDREW
MANCHESTER
Mandeville
ST. ELIZABETH
CLARENDON
Kingston
ST. THOMAS
5 4 3 2 1 0 5 10 15 MILES
N
Total Acreage Of Settlements
> 1800
1601 - 1800
1401 - 1600
1201 - 1400
1001 - 1200
801 - 1000
601 - 800
401 - 600
201 - 400
< 200
Avreage Acreage Of holdings
>8.1
7.1 - 8
6.1 - 7
5.1 - 6
4.1 - 5
3.1 - 4
2.1 - 3
< 2
Administrative Div. & Dist. Offices
Boundaries Of Parishes
Data Derived From Lands Dept. Kingston Jamaica 1964
Drawn By S. F. HAN
78°
77°30'
77°
76°30'
18°30'
18°00'

Under the Land Settlement Programme initiated in 1938, 26,325 settlers have been settled on more than 191 schemes comprising a total of 137,000 acres (see Appendix A). As shown in Figure 10, the heaviest concentration of settlement schemes is in the eastern parishes - St. Mary, Portland, St. Thomas, and St. Andrew. This concentration can be explained partly by the fact that these areas were the most depressed and possibly had the greatest number of unemployed peasants, left without any means of support by the decline of the banana industry which in the early 1930's had dominated the economy of St. Mary and Portland. Relief properties, mentioned earlier in this chapter, were pioneered in these parishes. In St. Andrew, although some of the schemes were primarily for housing purposes, agricultural schemes had to be established to cope with the large number of landless farmers. Because of insufficient land on which to engage in profitable farming the holding sizes were necessarily small (see Figure 10).

The distribution in other parts of the island has been affected by both environmental and historical factors. For instance, agricultural land in Trelawny and St. Ann is limited by the advanced Karst development

resulting in the Cockpit Country, hence the sparsity of schemes in these two parishes. This however, is not the only reason why there are so few schemes in Trelawny. Sugar still dominates the entire agricultural scene in this area, and besides, there are large cattle properties in the parish, earning it the rather dubious distinction of being the "parish of large properties." A large proportion of the agricultural acreage of St. Catherine is also occupied by sugar estates, likewise that of Clarendon and Westmoreland. Hence the small number of settlements in relation to the area of each of these parishes. (See Appendix B which lists the sugar estates in each parish giving their respective acreages).

Historically, peasant settlements have been relegated to the hillier lands which were unsuited to sugar production in areas where sugar was an important crop. This has continued to be a significant factor in the location and agricultural development of many settlement schemes. (See Figures 13(a) and 13(b)).

As mentioned above, the average holding size on most of the settlement schemes is too small to compensate for the often inferior quality of the land.

Size of holdings should be influenced first, by the amount of land available,and second, by the condition of the land - but this has not been the case. Instead the size of holdings has been such that farmers find it difficult to eke out an adequate subsistence from land of which only a part of the total area may be cultivable.

A new programme for settlement has been proposed - the Land Reform Programme. Many of the problems of Land Settlement experienced in Jamaica have been investigated and plans made to eliminate some of the difficulties. It criticizes the Land Settlement Programme as it has been operated in the past, blaming lack of agricultural improvement on the uneconomic size of the holdings.

This new programme also recognizes the need for giving attention to the "land-hungry" attitude of the Jamaica peasant and acknowledges its significance in the following statement:

> The two-fold aims of this programme are better utilization of land on the one hand, which means in practical terms, higher production and productivity; and on the other hand, satisfaction or alleviation of the social urge to possess land, by more equitable distribution of available resources. (Five Year Independence Plan, p. 114)

It is important however, to realize that the satisfaction of "land-hunger" must take second place to the goal of increased agricultural production, since it has been the cause of many of the problems of Land Settlement today.

CHAPTER V

AGRICULTURAL DEVELOPMENT AND THE LAND SETTLEMENT PROGRAMME

Agricultural development in National Planning

Before a meaningful assessment of the role of land settlement in agricultural development can be made, it is useful to show the relationship between agricultural policies and planning on a national scale. Karve has pointed out that agricultural reform should be the basis of overall national planning, particularly in developing countries such as Jamaica, where agriculture forms an important part of the economy. This, he felt, had been largely ignored in the past. He said that

> while developing states have, as a rule, attended to problems of land reform and agricultural development in a sectional manner, almost nowhere has a radical and comprehensive change in the agrarian economy been treated as a basis for the overall task of national planning.
> (Karve, 1964; p. 10)

In Jamaica the well-being of the national economy depends on a firm and productive agricultural base, as a large proportion of the country's labour force is engaged in agriculture which accounts for 35.4% of the gross domestic product. (Economic Survey, Jamaica, 1964). Fur-

thermore industrial development can only take place if there is a strong agricultural base. The industrial sector depends on the agricultural community as a market for its products, similarly the industrial sector consumes the commodities produced by the agricultural population.

National planning in Jamaica has been organized on a sectional basis without emphasis on the proper relationships between all sectors of the economy. This has had the effect of de-emphasizing the importance of agriculture in the economy. Many of Jamaica's light industries are based on agricultural products - fruit preserving and canning, the manufacture of soap and edible products - and these could be expanded further if only agriculture was producing enough to supply the growing demand. A rapidly expanding tourist industry has also meant an increased demand for locally produced foodstuff. There is no lack of markets for agricultural products; the problem lies in the level of production. The small farmers, who produce the major part of Jamaica's local foods, have not been able to meet the demand. How can this problem be overcome? The answer rests with the kind of agricultural policy that is followed in the island.

Agricultural policy should not merely create new jobs to take care of the surplus rural population, because

> ... providing as much employment as possible is not the objective of agricultural policy; if it were, one would have only to divide the land area by the population, and give each person his share. The object of agricultural policy is not employment but production. (Lewis, 1951; p. 67)

The Agricultural Policy Committee for Jamaica (1945) also gave the warning that agricultural efficiency should not be "sacrificed to demands for manual work." Agricultural policies should be designed with the aim of achieving a high level of efficiency by maximum use of the available land. This is extremely important in Jamaica where the population density is so high and the ratio of cultivable land to the rural population so low. For each rural inhabitant (total population excluding Kingston and the next two largest towns) there is only .6 acre of cultivable land. Lewis (1951) has stated that "the standard of living is bound to remain deplorably low as long as this sort of pressure on the land continues."

Land is in short supply in Jamaica for the small farmer. There are several hundred acres of cultivable land which have been grossly under-utilized and

which may be brought into production to ease the situation. But it is a mistake to think that the level of production will be raised simply by making land available to the small farmer. Production will continue to be substandard if the existing cultivated land is not used more efficiently. This means that farmers must be taught improved methods of cultivation under a very well-planned programme.

The role of land settlement in agricultural development

It is our contention that Land Settlement provides the means for agricultural development, and should not be used entirely for providing employment. The agricultural Policy Committee (1945) rightly points out that

> ... it is also wrong to suppose that Land Settlement is a solution, or even a partial solution of the employment problem. Indeed the breaking up of large units of land merely to permit its indiscriminate sub-division among the unemployed, who are largely unskilled in mixed-farming, at a time when experienced farmers are finding it difficult to carry on their operations, must in the long run prove harmful. (Agr. Policy Comm., Report; p.11)

What then is the proper role of Land Settlement in agricultural development? Before this question can be answered satisfactorily, it is necessary to examine the general aims of agricultural policy.

The broad objectives of an agricultural policy should be first, to improve the economic conditions of all the people who depend on agriculture for their livelihood. Secondly, it should introduce improved land use methods in order to ensure (i) that food may be produced in sufficient quantity, quality and variety, so that a high nutritional level can be maintained; (ii) that principal export crops be expanded and new crops introduced on the export market; and (iii) that agricultural raw material provide a basis for industrial development.

After stating the aims of agricultural policy, the role of Land Settlement becomes obvious. It must, at least in part, ensure that the goals listed above are attained - especially in the field of food production. Land Settlement schemes should be used to demonstrate to small farmers what results can be gained through careful cultivation, growing crops best suited to the ecological conditions on particular schemes. As Lewis said, "a government Land Settlement should be a model to small farmers in the district, and should thus help to raise the general tone of farming." In other words, all Land Settlements should be established as special projects such as the Dujaila Land Settlement in Iraq (mentioned in

the Introduction). To achieve a measure of success in terms of the stated objectives there should be a special Department entrusted with the job of directing all activities on Land Settlement Schemes.

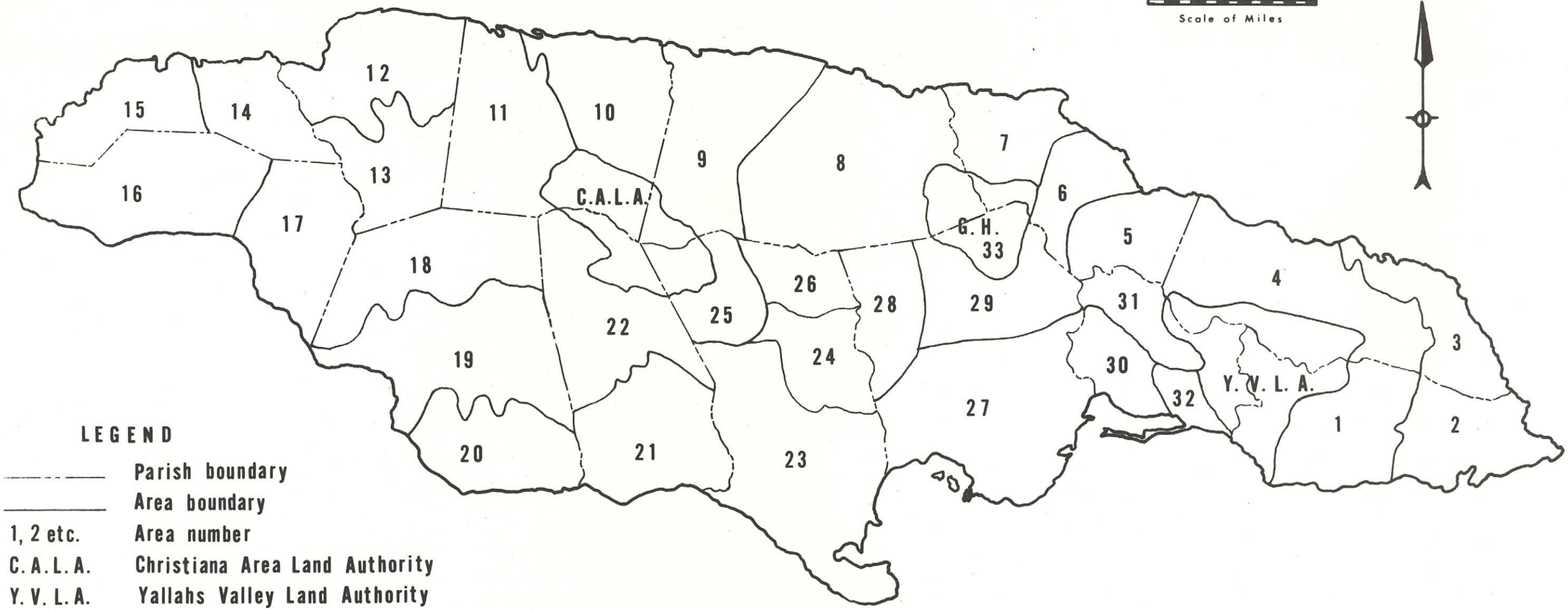
At the present time, agricultural and social development on Land Settlements in Jamaica are the responsibility of the Lands Department. Land Settlement Officers are expected to introduce the government's agricultural programmes to the farmers, encouraging good farming habits among the settlers and demonstrating the value of adopting proper conservation measures. However, it is difficult for Land Settlement Officers to perform these tasks as well as other duties which are part of their job. Collection of payments, involving at least three settlements located at some distance apart from each other, requires a great deal of travelling, and officers have little time to concentrate on the development of the settlement into a productive agricultural unit.

The Land Authority

The Land Authority in Jamaica was visualised by the Agricultural Policy Committee in 1945 as

JAMAICA

AGRICULTURAL EXTENSION AREAS



LEGEND

———	Parish boundary
———	Area boundary
1, 2 etc.	Area number
C.A.L.A.	Christiana Area Land Authority
Y.V.L.A.	Yallahs Valley Land Authority
G.H.	Guy's Hill Special Area

N.E.W.

> ... the balancing factor to regulate the administration of Land Settlements, and the powers given to the Land Authority devised with regard to the future of Land Settlement as well as to the problems of land use as a whole throughout the island. (Agricultural Policy Committee of Jamaica, 1945 b; p.3)

The International Bank for Reconstruction and Development Mission to Jamaica in 1953 recommended the establishment of an island-wide Authority to work on agricultural problems, particularly soil erosion in the more hilly areas, in order to carry out extensive rehabilitation. This recommendation was modified by the Ministry of Agriculture and Lands, and special areas were designated to be Authority areas. These are the Yallahs Valley area and the Christiana area (Figure 11) which were in advanced stages of soil erosion because of poor land use on steep slopes (Plate 10). The Yallahs Valley Authority, established in 1951, encompasses an area of 45,000 acres in the drainage basin of the Yallahs River. A large part of this area lies between 5,000 and 7,000 feet above sea level within the complex Blue Mountain system. A long history of erosion and poverty among the peasant farmers made it necessary for the Authority to introduce conservation measures (Plate 11) and modern

Plate 10 Excessive soil erosion in the Christiana area. (Photo by T. L. Hills).

Plate 11 Conservation barriers in the Yallahs Valley Area. (Photo by T. L. Hills).

agricultural techniques to improve the economic standards of the farmers.

The Christiana Area Land Authority, initiated in 1954, includes an area of approximately 68,000 acres with over 10,000 farm families (about 60,000 people). This was an area with similar problems to those of the Yallahs Valley area - haphazard cultivation and soil erosion (Plate 12), therefore the task of the Authority was mainly one of rehabilitation.

> The main job has been to reclothe the area by planting tree crops, rehabilitate the people by providing employment, agricultural credit, subsidies, technical aid, water supplies, recreation and security of tenure (1)

Responsibility for acquiring lands for settlement is part of the job of the Authority. Up to 1963, eight properties with a total of 8,000 acres were acquired in the Christiana area for free-hold settlement. The main objective was to provide the people who had previously been tenants with security of tenure with a view to educating them in more productive farming methods.

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(1) Dudley Philips, Brief Historical Background of the Christiana Area Land Authority - Pamphlet (typewritten Ms. unpublished).

Plate 12 Rural settlement in the Central Region of Jamaica showing typical haphazard peasant farming. Note evidence of soil erosion. (Photo by T. L. Hills).

Hillside farming has received much attention and terracing has been introduced as a form of soil conservation. Participation in settlements on which terracing has been introduced is controlled by certain regulations. Families taking part in the project must serve a two-year probation period during which they must prove their ability as farmers. If the Authority is satisfied with their performance they are allowed to purchase the land. This method of controlling the type of land use in any area should prove quite effective and could be adopted on an island-wide basis to ensure the success of agricultural projects. Land Authorities are responsible for all the activities - social and agricultural - which occur in the designated area, and in Jamaica they have been very valuable in rehabilitation of certain areas.

However, the work of Authorities has been challenged by Dumont (1963) in his report on Jamaican agriculture, and he feels that this is a very expensive way of fighting soil erosion. The Five-Year Independence Plan (1963-1968) proposes to decrease expenditure on Land Authorities, and to curtail their services in the future. Table V-1 shows the proposed expenditure for

Land Authorities during the 1963-1968 period, comparing it with the amount of money allotted by the National Plan for Jamaica 1957-1967.

Table V-1

Expenditure on Land Authorities

(a) The National Plan for Jamaica 1957-1967

1957-58	1958-59	1959-60	Total for 1957-67
£128,000	£175,000	£200,000	£2,000,000

(b) The Five Year Independence Plan 1963-68

	1963-64	1964-65	1965-66	1966-67	1967-68
YVLA	£57,000	£53,000	£39,000	£18,000	.....
CALA	63,000	75,000	75,000	80,000	80,000
	120,000	128,000	114,000	98,000	80,000

Total Expenditure £540,000

Source (a) National Plan for Jamaica 1957-67
(b) Five Year Independence Plan 1963-68

It is the author's opinion that, in view of the success of Land Authorities in promoting agricultural improvement in the areas to which they were assigned, their work should be continued on a larger scale. We agree with Dumont that this is an expensive way of fighting erosion, but the work of the Land Authority does not

simply entail conservation; indeed, it encompasses social as well as agricultural development. With its specially trained staff, the Land Authority is the logical agency to take over the work of administering Land Settlements.

The Extension Services

Apart from the work done by Land Authorities in their special areas, agricultural knowledge is disseminated by the Extension services of the Ministry of Agriculture and Lands. Although, the Lands Department claims that agricultural development is emphasized on Land Settlements, they do not receive special attention. The Extension Services exist primarily,

> to assist the people of Jamaica, particularly the farming community, to analyse and solve their problems, to develop desirable attitudes, to improve and increase their knowledge, to develop their skills, and to utilize the available human and physical resources for their economic, social and cultural development. (1)

The Extension Officers work in two major groups:(a) the Advisory section and (b) the Development section (see Figure 12). The Advisory Officers keep farmers informed

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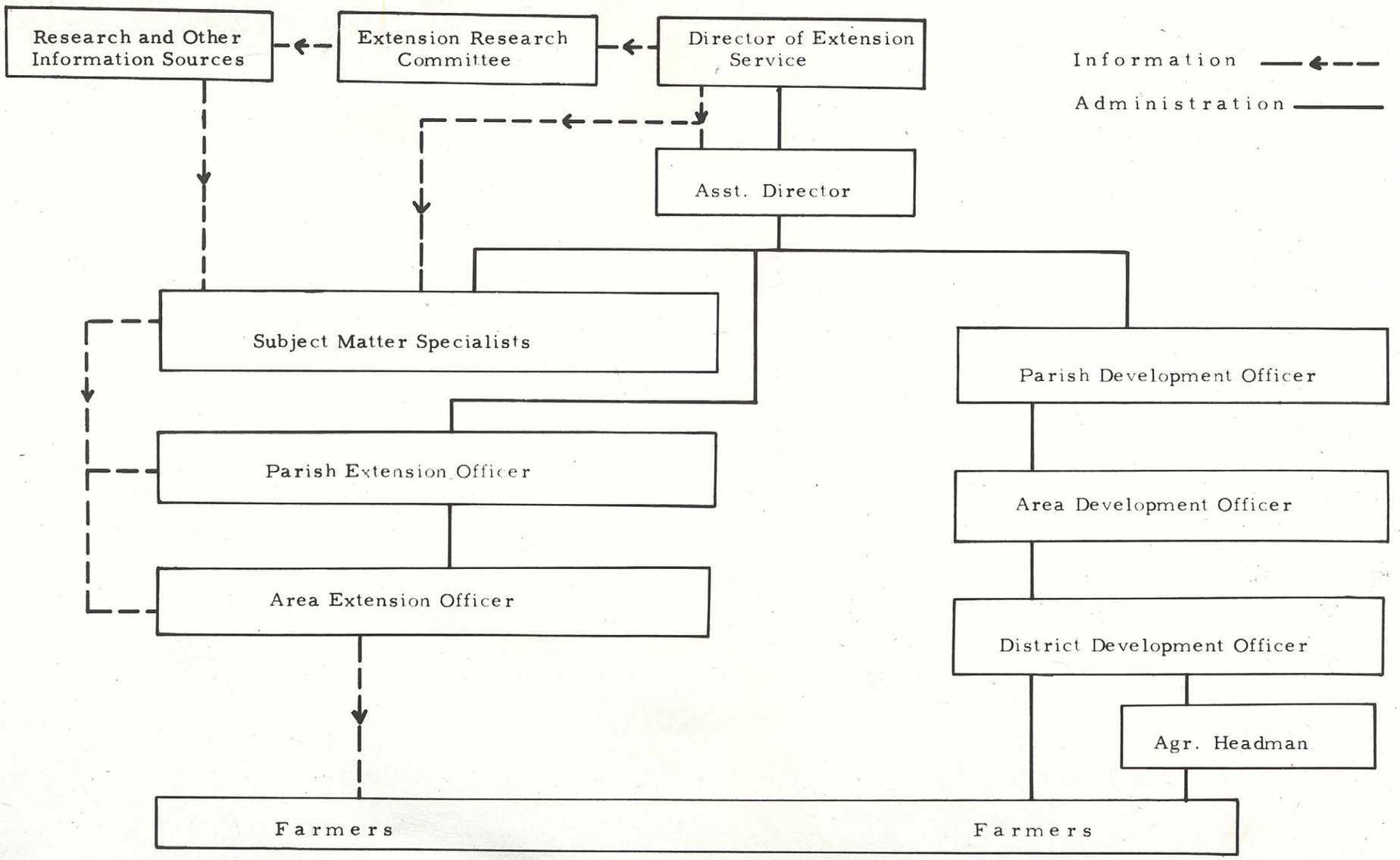
(1) Extension Services, Ministry of Agriculture and Lands - Statement of aims and objectives - typewritten Ms.

FIGURE 12

ORGANIZATION OF AGRICULTURAL EXTENSION SERVICE

MINISTRY OF AGRICULTURE AND LANDS,

JAMAICA



about credit facilities and assistance available to them under the different agricultural programmes, whereas Development Officers help the farmer in making plans for his farm so that he may qualify for the benefits of which he is advised by the Advisory Officer.

For purposes of administration, the island has been divided into 33 areas (Figure 11) each of which is staffed by two area extension officers (one advisory, and one development). The area officers may have to assume responsibility for more than 2,000 holdings. This is too large a number to administer effectively, and often many of the holdings are never visited by the extension officer - a complaint which is commonly voiced on the Land Settlements. Obviously, agricultural development is hindered rather than helped by inefficient services.

Other agencies such as the Jamaica Agricultural Society, the Jamaica Social Welfare Commission, and 4-H Clubs are also engaged in Extension work. The criticism has been made that the large number of groups in the Extension services causes duplication of services, and has lowered the efficiency of the Extension Department considerably (Dumont, 1963).

Community Development

The success of Land Settlement Schemes as progressive agricultural communities depends to a great extent on social stability, because it is only by "building up a sense of social solidarity and self-help among members of communities, large and small" that agricultural education can be made available to farmers. (Karve, op. cit., p. 20). Land Settlement in Jamaica has been visualized as a,

> ... project which involves the welding of groups of farmers into communities. This entails not only development of individual holdings, but the building of new group loyalties and the creation, in the settlers, of the desire and ability to cope with the many problems involved. (Lands Department pamphlet, p.5)

To achieve this objective, the settlers are encouraged to form co-operatives and associations through which they can work together for the improvement of the settlement, particularly in the case of co-operatives established for the sale of crops produced on the settlement, so that economic stability could be ensured.

Settlers' Associations, organized among the settlers and run entirely by the farmers themselves, deal with problems encountered within the settlement.

Co-operatives are formed on the settlement through the instrumentality of the association. However, it has been observed that only a few settlements had active Settlers' Associations, and co-operatives had met with little success. (See Appendix C). Social activities on the settlement take place in Community Centres constructed by settlers as a form of self-help. Land reserved on the properties for the community centre also serves as a recreation ground. The elaborateness of the structure of the Centre reflects the initiative of the settlers. In the Centre, farmers' wives and daughters receive instruction in handicrafts, needlework, home economics and child care, from resident Social Welfare workers. The whole idea of these classes is to teach the women how to utilize the farm products on the one hand, and become proficient in needlework or basketry which could provide an additional source of income on the farm. Certain centres were producing straw goods on consignment from the Craft Development Agency in Kingston.

Some of the settlements are part of the 100-Villages Development Project instituted by the Ministry of Development and Welfare, to foster community develop-

ment, "to make life in the country parts more attractive and to raise the standard of living there, thus stopping the 'human erosion' of the countryside." The entire farm family will be able to contribute to the income of the farm, because the farmer's wife and children will also have some earning power.

The "human erosion" still continues however, because the activities in most settlement communities do not seem to be able to satisfy the needs of the young people. Girls trained in craft work have little opportunity to practise their skill, therefore find it to their advantage to move to Kingston, Montego Bay and Ocho Rios to tap the tourist market in those areas.

Young adult males also desert the settlements, as farming offers only an insecure future, and they are often discouraged from adopting this as a means of livelihood by their parents. In addition, there is a social stigma attached to farming, which is considered to be a degrading occupation. It is not uncommon to see young men standing idle on shop piazzas and in the streets, rather than engage in such menial work.

Organized community activities such as they are, cannot substitute for economic security which productive and profitable farming gives. As a result of unsuccessful farming, the settlement communities have failed to provide the stable environment in which man is attached to the land socially, culturally and economically. The small peasant farmer must be satisfied in all these ways if he is to contribute fully to the economic progress of Jamaica.

The next chapter will attempt to put all the problems and features described above in their proper perspective in the context of specific settlements.

FIGURES 13 a and 13 b

These figures show (a) the influence of distribution of large estates on the location of Land Settlement Schemes, and (b) the geographical distribution of sugar estates in the 18th and 19th centuries, indicating similarities to the present extent of estates in Jamaica. Since the estates occupied the best agricultural land then, the Emancipated slaves had no choice but to settle in the hilly, inferior lands of the interior. This has determined to a large extent the present geographical location of Land Settlement Schemes which developed in areas of peasant settlement and on land which the estates could not utilize.

Most of the large estates (particularly sugar estates) are found on the flat to undulating land below 500 feet, whereas more than 80% of the Settlement Schemes are located in the higher, more rugged areas. These Settlement Schemes occupy land which does not possess the required ecological conditions for the production of estate crops (sugar cane, bananas, coconuts). For instance, those Schemes in St. Elizabeth situated below 500 feet occupy swampy areas which are of little value to estate crops; those in close juxtaposition to large properties (especially on the North Coast) have been located on the fringes of these properties, on land which is marginal to the production of bananas and coconuts.

a.

JAMAICA
DISTRIBUTION OF LARGE ESTATES
AND
LOCATION OF SETTLEMENT SCHEMES

0 5 10 15 20 Miles

N

b.

SUGAR ESTATES
IN 1790 AND 1890

Sugar estates in 1790

Sugar estates in 1890

Sugar estates settled since 1790 and still in production in 1890

5 0 5 10 15 20 Miles

After E. Paget (C. Liddell) 1956.

Sugar estates

Other large estates

Settlement scheme

500′ contour

Compiled and drawn by N.E. Walters

CHAPTER VI

A DISCUSSION OF SELECTED SETTLEMENT SCHEMES

In previous chapters we have outlined the physical and historical background to agriculture in Jamaica, and examined Agricultural and Land Settlement policies. The discussion of settlement schemes in this chapter is an attempt to put all the aspects pertaining to Land Settlement in their proper perspective. The settlement schemes described in this chapter exhibit problems typical of Land Settlement in Jamaica and at the same time represent characteristics peculiar to one particular area or parish.

The influence of geographical, historical, cultural and economic factors will be evaluated in order to explain the functions of Land Settlement in Jamaica - i.e. to assess whether or not Land Settlement assumes an effective role in the agricultural sector, or indeed whether it has a role to play at all.

A. Southern Division

Golden Valley (St. Thomas)

Located in the eastern section of the island in a region of steep slopes, this settlement has an acreage

of 1,301 $\frac{1}{2}$ acres, occupied by 206 settlers. The average size of farm holdings ranges from 5 to 7 acres. A village area divided into $\frac{1}{2}$ acre lots, has been set aside for farmers who own agricultural lots.

Flat land is limited to the village area, while the farm holdings are located on land which becomes increasingly hilly as one moves away from the village. Parts of the area have slopes of 20^{o} to 35^{o} which are very susceptible to erosion. Consequently, there are severe limitations to farming.

Although the settlers are encouraged to plant tree crops (food forests) as a soil conservation measure, a few of them cultivate sugar cane. Proximity to Georgia and Serge Island sugar factories (see Figure 13 a) provides the incentive for sugar cane production, as the farmers find it more advantageous to plant cane because marketing is assured. In addition, labour requirements for sugar cane are not so high, once the initial preparation of the land and planting takes place. Most farmers, however, prefer to concentrate their efforts on the village lot where they establish kitchen gardens producing vegetables, yams, cocoes, and other food crops.

There are several reasons for this. One reason is the distance from the farm holdings, since farmers frequently must travel more than a mile to their farms on bridle tracks over very hilly terrain. Besides the difficulty of getting to the holding, there are problems involved in taking produce out. Difficulty in obtaining labour also discourages the farmer from working the land. Some farmers try to solve this problem by organizing partnership help. Two or three farmers will get together to work on each other's holdings, spending an equal number of days on each holding (M.G. Smith, 1956). Praedial larceny is another deterrent to farming in Golden Valley. Crops left on the holdings disappear overnight because the farmer is not close by to protect his interests. It is much easier to supervise one's farm if one lives on it.

Absence of a well-developed market for food crops and vegetables is another reason for lack of incentive among the farmers on this settlement.

The water supply here is limited, although the Plantain Garden River flows through the property. The only available water is for domestic use, and this must be transported from stand-pipes in the village in large

tins on the head or by donkey.

Poverty, which is largely the result of conditions described above, prevents the economic and agricultural development of this settlement.

Bodles (St. Catherine)

The Bodles Land Settlement Scheme consists of three sections, occupying a total of 791½ acres. Originally intended as an agricultural settlement, it is gradually becoming a residential area. Easy access from Old Harbour and Spanish Town encourages its residential function. Residential land is less available in the urban areas and more people are being attracted to locations outside the towns. With rising real estate values, land on the property which in 1950 sold for £30 per acre, now sells for £800 to £1,000. Such prices are very attractive to the settlers, especially in view of the difficulty of making a livelihood as farmers. The reasons become more obvious when one examines the settlement more closely.

There are several favourable factors which would perhaps encourage agricultural development on the settlement, but they are outweighed by the unfavourable factors. First, we will deal with the favourable conditions.

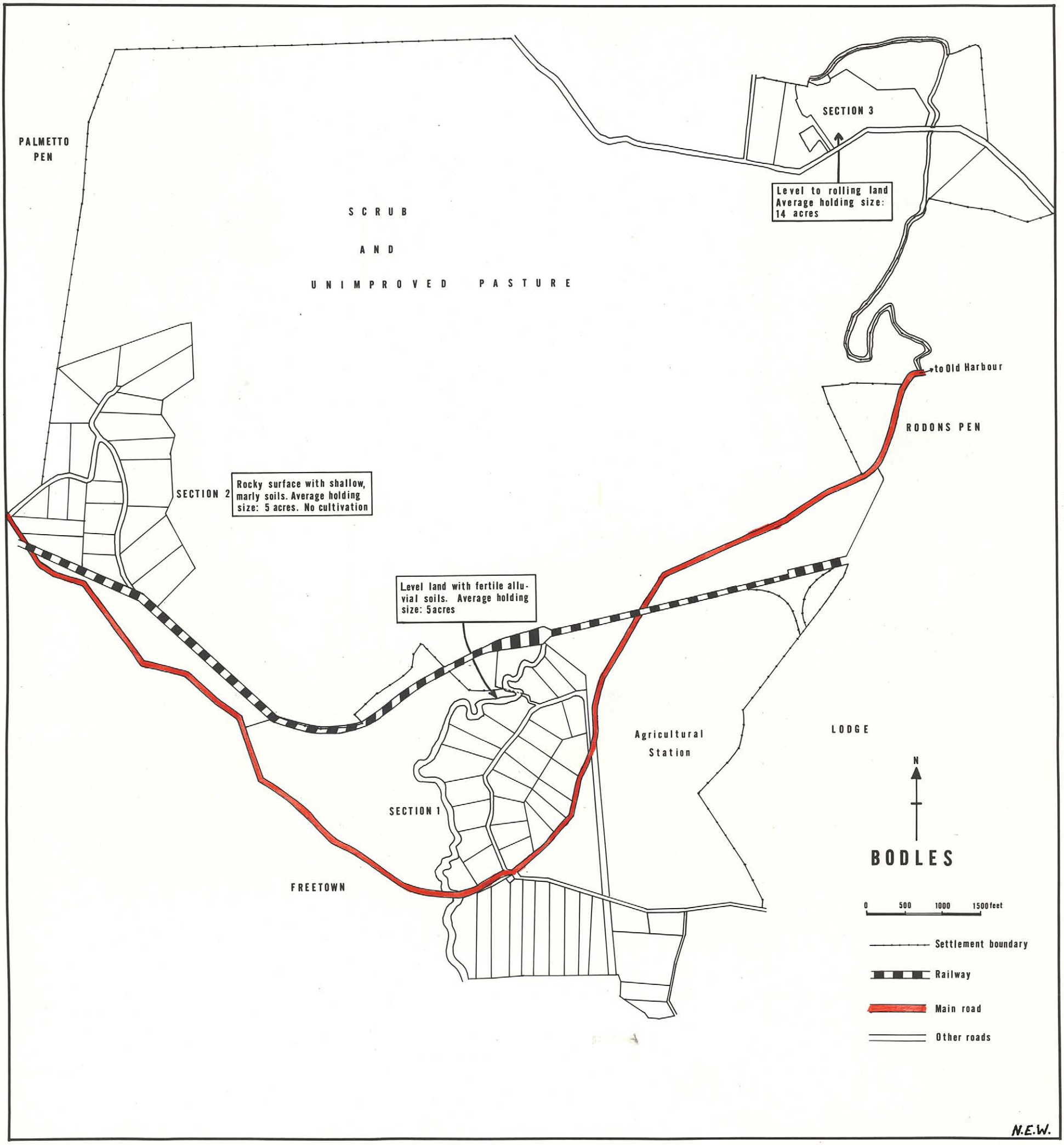
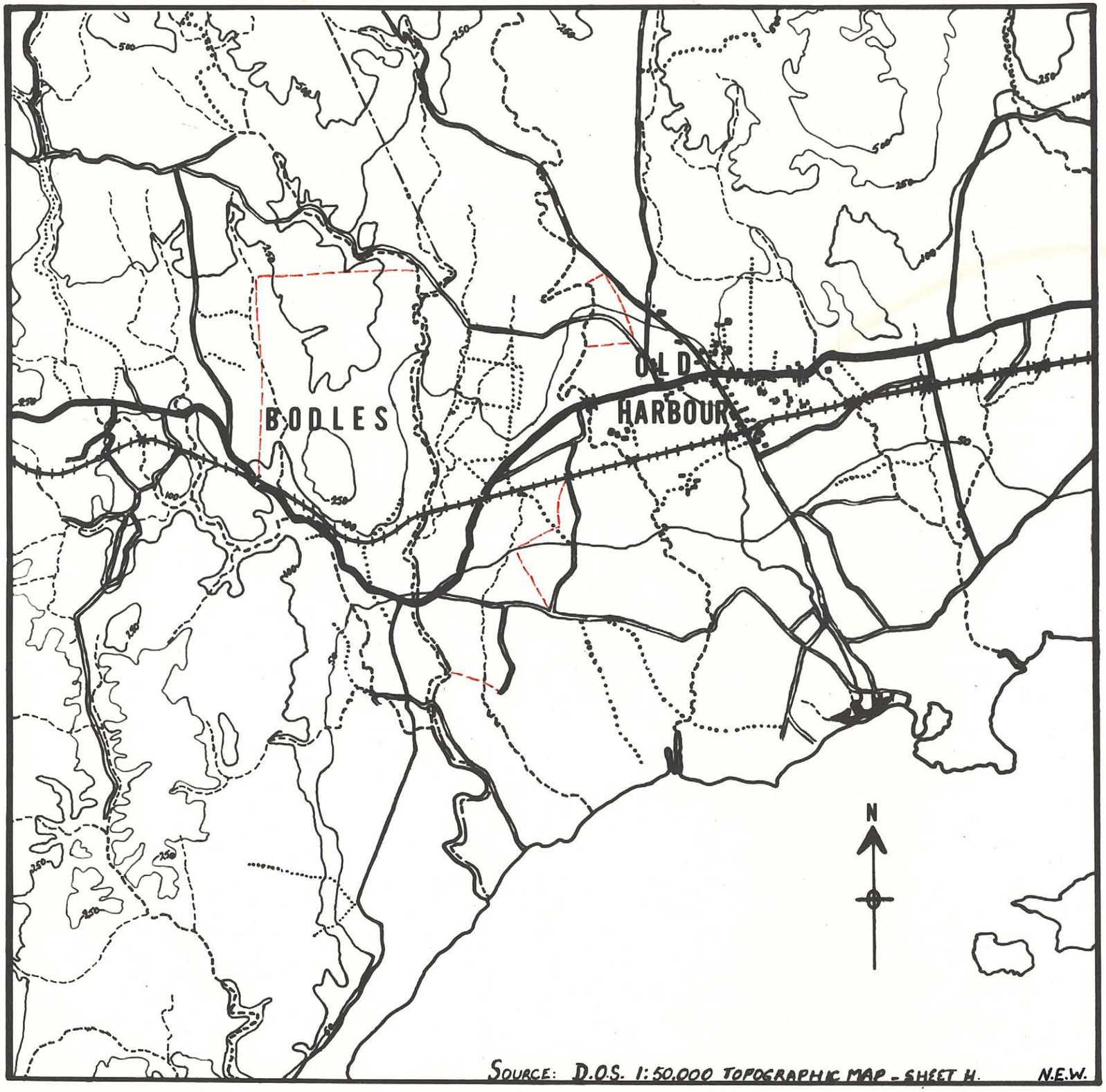

PALMETTO PEN
SCRUB
AND
UNIMPROVED PASTURE
SECTION 3
Level to rolling land
Average holding size:
14 acres
to Old Harbour
RODONS PEN
SECTION 2
Rocky surface with shallow, marly soils. Average holding size: 5 acres. No cultivation
Level land with fertile alluvial soils. Average holding size: 5acres
Agricultural Station
LODGE
SECTION 1
FREETOWN
N
BODLES
0 500 1000 1500feet
Settlement boundary
Railway
Main road
Other roads
N.E.W.

FIGURE 14

FIGURE 15



SOURCE: D.O.S. 1:50,000 TOPOGRAPHIC MAP - SHEET H. N.E.W.

BODLES LAND SETTLEMENT and environs

Miles

LEGEND

- Parish boundary
- Seasonal stream
- Permanent stream
- Parochial Road (Motorable)
- Unclassified Road
- Main Road (Class B)
- Main Road (Class A)
- Bridle path
- Settlement boundary
- Railroad
- Contours

The land is flat or rolling on the greater part of the property (see Figures 14 and 15), and the fertile alluvial soil could produce well with irrigation. Transportation and marketing of crops would be facilitated because the settlement is within easy reach of Old Harbour and Spanish Town both by road and railway (Figure 15). Unfortunately however, agricultural development on the settlement is severely handicapped by the lack of water. Bodles lies in rainfall Zone III with an annual precipitation of less than 50 inches which falls very irregularly. (Annual precipitation on Bodles Agricultural Station is 46.54 inches). Consequently the crops which would do best here (such as tobacco) require irrigation. There is no water on the settlement, although the Agricultural Station which adjoins the settlement has a supply of water for irrigation in crop research. Section 2, however, does not enjoy any of the favourable soil conditions like the other two sections. As Figure 14 shows, the soil is marly, and the surface rocky. Even if water were available, it would be difficult to produce crops economically.

Settlers with allotments in Sections 1 and 3 have tried to produce sugar cane, tobacco, pumpkins and "catch crops" such as corn, peas, and peanuts but with little success due to the absence of water. Some water for domestic purposes is piped from the Mid-Clarendon supply, but even this is very irregular.

As a result of this serious lack of water, many holdings have been taken out of production and farmers are forced to seek alternative employment. Most of the settlers work at Port Esquivel, the Alcan Bauxite company's wharf, and at the West India Sugar Company (WISCO) wharf.

The potential of Bodles as an agricultural settlement depends largely on the availability of water. The Parish Council plans to install a water supply in the near future, but unless this takes place soon, the property will be withdrawn from agricultural production as more and more farmers dispose of their land or seek other means of making a living.

Charlton (St. Catherine)

Originally a cattle property, this settlement of some 2,000 acres is situated on the fringe of the town of

SCHWALLENBURG

to Ewarton

HOLLY MOUNT

MOUNT PLEASANT

IVY PEN

GRIER MOUNTAIN

EWARTON

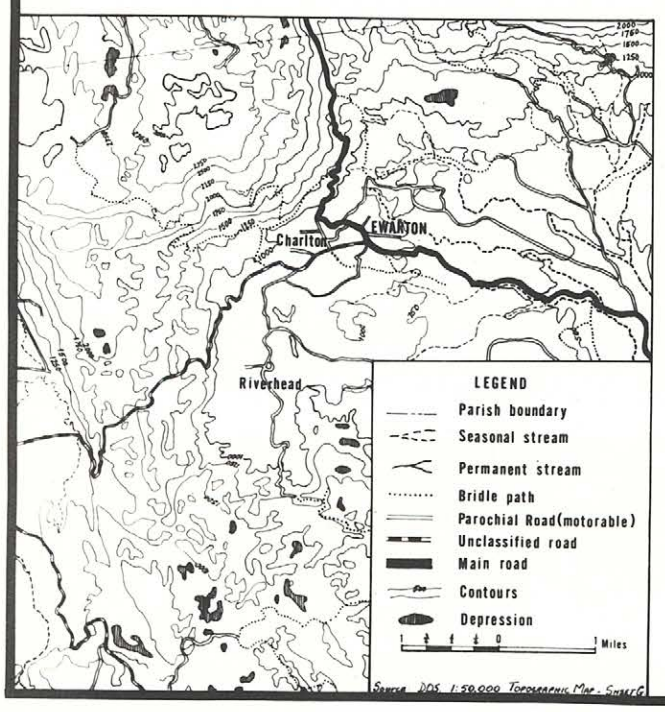
to Linstead

WATERLOO

RIVER HEAD

LEGEND

- Bridle path
- Parochial road
- Main road
- Settlement boundary
- Cliff
- Forest reserve
- Demonstration plot
- House reserve



Source DOS 1:50,000 Topographic Map - Sheet 6

10 5 0 10 20 30 40 Chains

CHARLTON

N

After: Lands Department Key Plan

N.E.W.

Ewarton (see inset, Figure 16), and is easily accessible by road from either Linstead or Kingston. A large part of the property is fairly mountainous (as the inset map of Figure 16 shows) and slopes attain angles of 20° in the areas farthest away from the main road. Where the slope of the land exceeds 20°, it is left in forest; a total of 817 acres has been designated as forest reserve (Figure 16).

Interior basin deposits of alluvium (mainly clay and clay loam) can be found in small pockets on the lower part of the settlement, but the major soil type found on the steeper slopes (20° and more) is a stony loam formed on limestone.

There are 341 allotments with an average farm size of five acres. The largest farm on the settlement has an area of fifty acres and consists of several lots purchased from other settlers. Most farmers live on the agricultural holdings, although there is a village area subdivided into $\frac{1}{2}$ acre lots. The village area provides accommodation for the industrial workers who are employees of Alcan (Jamaica) Ltd. Ewarton works, where bauxite is processed into alumina.

The major crop produced on the settlement is citrus. Some settlers raise poultry for Jamaica Broilers Ltd., under a special arrangement, while a few cows are kept for dairying purposes. Milk is sold to the Condensary at Bog Walk situated about fifteen miles away. Successful dairy farming is hampered by (a) the lack of large holdings and (b) the absence of water. Allotments near the front of the property receive piped water from the town supply, but the flow is sometimes irregular. A new reservoir being built near Mount Rosser, about five miles north of Ewarton will help to remedy the situation. Lack of sufficient capital to develop the holdings encourages many of the settlers to supplement their incomes by working at the Alcan alumina plant. The most successful farmer on this settlement was a man who had spent many years in the United States of America and had returned to the island to retire.

The location of Charlton, adjacent to Ewarton where residential land is at a premium, has affected land values on the settlement significantly. Land which 10 years ago sold at £70 per acre now commands a price of £1000 per acre - a figure which will continue to increase as long as the demand for land exists. A number of settlers

have sold their holdings for residential development as a result of the rapidly rising real estate values, and because they have found farming to be unprofitable.

The encroachment of urban development, combined with the other problems outlined above, jeopardizes the future of Charlton as an agricultural settlement.

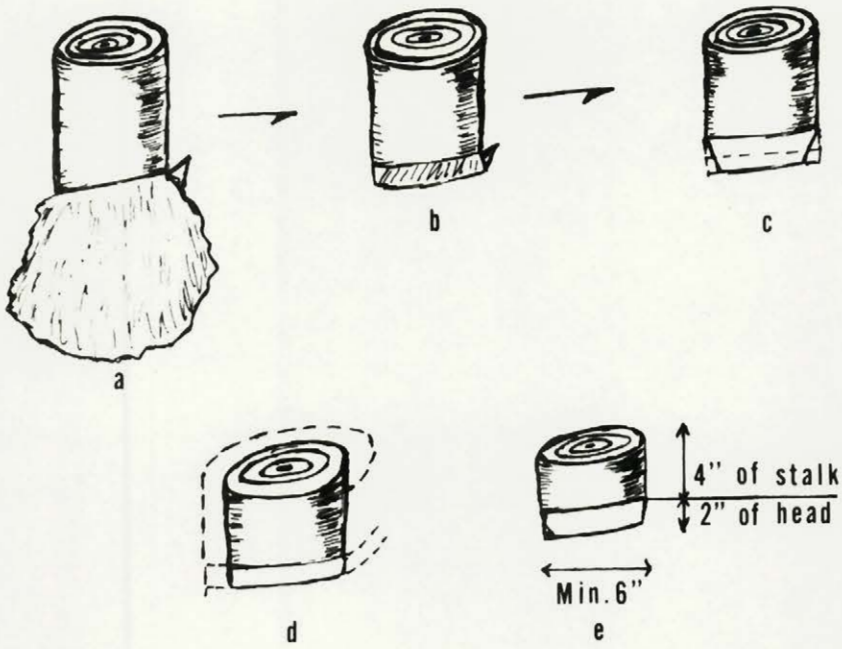
B. Northern Division

Windsor and Seaman's Valley (Portland)

Situated on the banks of the Rio Grande this property has a total area of 1268 acres. Holding size averages 8 acres on land which is flat or gently rolling with deep clay soils. Location in a high rainfall area (rainfall zone I) with an annual precipitation of 193.70 inches, and proximity to the Rio Grande means that the land is subject to periodic flooding. The fertility of the river alluvium however, encourages fairly high productivity. The settlement is in an area where bananas have been the dominant crop since the early 1900's, therefore it is not surprising that the largest acreage is devoted to this fruit. Other crops such as plantains, pawpaw (papaya), pepper, corn, dascheen, cocoes and coconuts are also grown. Bananas, however, are the main

FIGURE 17

Preparing clean sucker



a. Sucker
b. Head cut off to leave 1 - 1½ inches
c. Sides cut removing outer buds
d. Stalk cut and bark stripped to leave clean sucker
e. Clean sucker by paring with knife. Ready for planting

From: The Farmer's Guide

source of income for the settlers. Good drainage is important if bananas are to produce well on the heavy clay soils, and ditches are cut at regular intervals to drain off the excess water. The adoption of "clean sucker" planting (Figure 17) eliminates the possibility of attack on the banana plants by nematodes. This method of preparing the banana suckers also assures more vigorous growth. Great care is taken to prevent Leaf Spot disease from attacking the banana plants by regularly spraying them with oil or with a special liquid known as the Bordeaux mixture.

Settlers experience no difficulty in selling the bananas as there is a buying station close to the settlement on the banks of the river. Farmers across the river transport the bananas by canoe to the buying station. Bananas are purchased on special days of the week, and the settlers must bring the bunches of fruit either on their backs, by donkey or canoe to the station where they are weighed by the purchasing officer. Later, the bananas are picked up by trucks and transported to Port Antonio to be shipped to the United Kingdom.

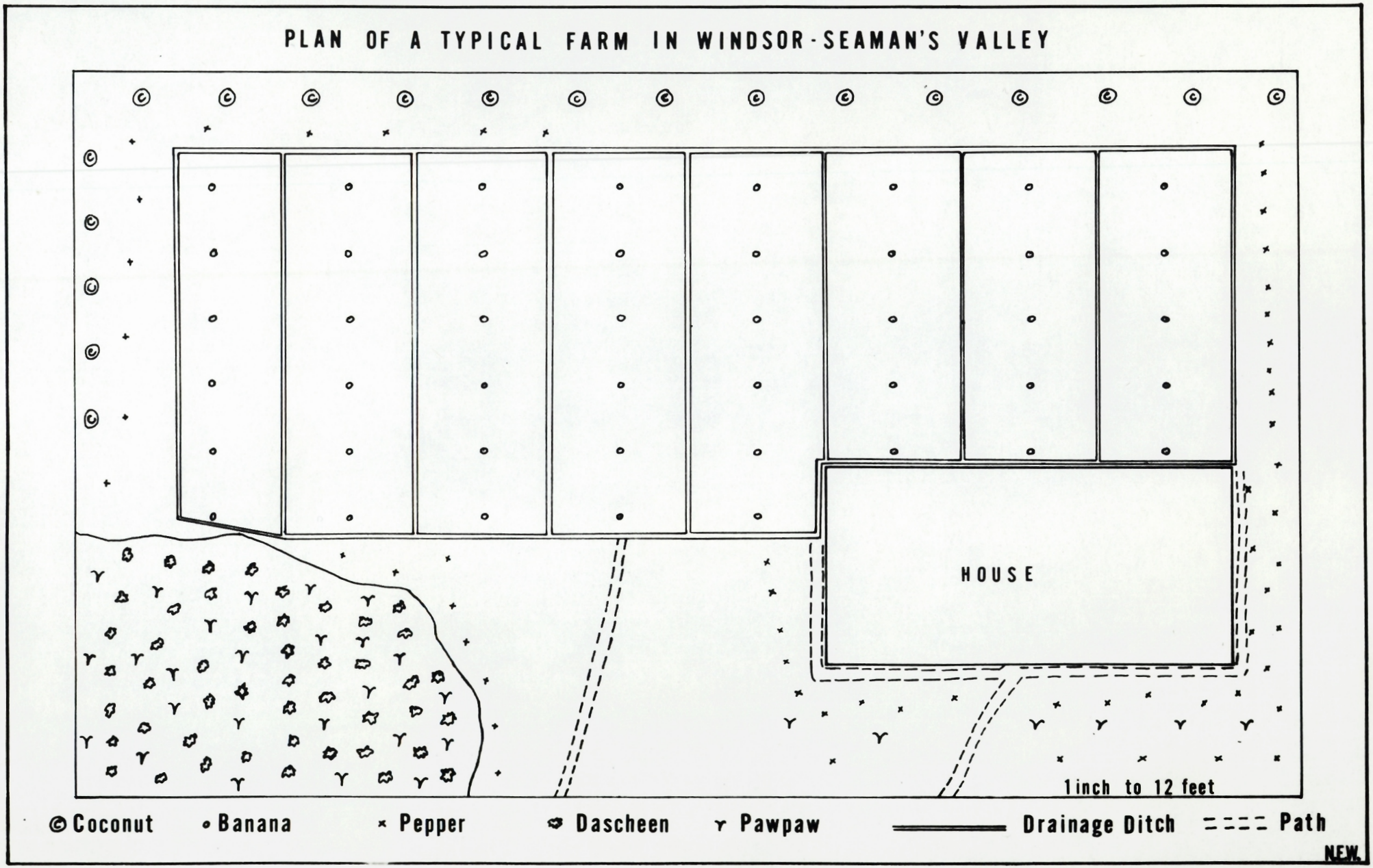

PLAN OF A TYPICAL FARM IN WINDSOR-SEAMAN'S VALLEY
HOUSE
1 inch to 12 feet
© Coconut
Banana
Pepper
Dascheen
Pawpaw
Drainage Ditch
Path
NEW.

FIGURE 18

Because clean fields are essential for the proper growth of bananas there is no intercropping in banana fields. The other crops are usually cultivated on the fringes of the fields, or in small plots close to the farmhouse. (See Figure 18). The ecological conditions of the area are well suited to Dascheen which grows best on moist, heavy soils. This and the other crops mentioned above are cultivated mainly for subsistence or for sale in the markets at Port Antonio.

Farming is a full-time occupation in Windsor-Seaman's Valley as bananas require constant attention - for planting, controlling the weeds, pruning the trees, periodic cutting away of dead leaves, and finally harvesting the crop.

Caenwood (Portland) (Plate 13)

Caenwood was originally a relief property started in 1946 to provide employment for veterans after World War II. Later 354 acres were converted into a freehold settlement, the average holding size being 3 acres. 160 acres of the lower section was reserved for an Agricultural Station growing nursery crops - cocoa, coffee and citrus. Research is now being conducted to

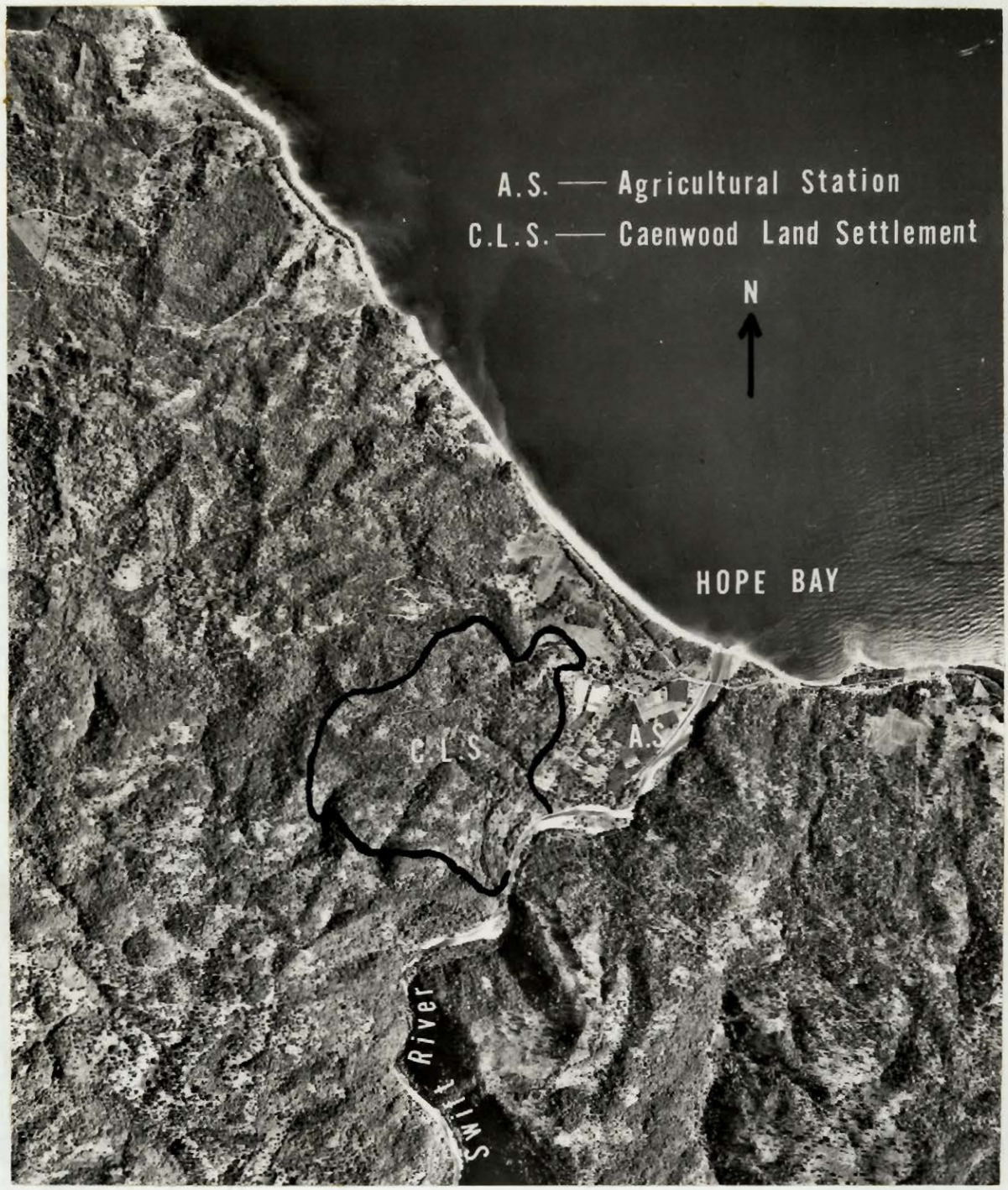


Plate 13 Air photograph showing location of Caenwood Land Settlement (Portland). Note Agricultural Station east of the settlement with well arranged fields on flat land. Compare this with appearance of the Settlement. (Photo by Hunting Surveys Ltd.)

develop hardier, disease-resistant strains of banana. The principal crops cultivated on the settlement are bananas, coconuts and food crops of which bananas and coconuts are the most important as Table VI-1 shows.

TABLE VI-1

Crop acreage (Caenwood Land Settlement)

Crop	Acreage
Coconuts, pimento, Citrus, coffee	157*
Bananas	100
Food crops	60
Pasture	50
TOTAL	367

Steep slopes and stony soil limit crop production, and erosion is a constant threat, especially in the case of bananas which are not at all suited to hillside cultivation.

Absentee ownership, widespread on this property, precludes the growth of a stable community which

---

* Coconuts account for most of this acreage.

in turn is an effective deterrent to agricultural progress.

Access to the settlement is limited due to the lack of proper driving roads. The gravel surfaced "main road" is motorable for only one mile and all the remaining roads are bridle paths. Farmers in the interior find it extremely difficult to get their crops out, so many of them have neglected the development of their holdings. Timber is cut from some of the holdings and sold to bakeries in St. Margaret's Bay for fuel.

Since incomes from three acres of inferior land are insufficient for the farmers, they rent other lands on which to farm, or some of them work on the Agricultural Station, in an effort to supplement their earnings.

In summary, economic progress on this settlement has been considerably handicapped by the uneconomical size of the holdings, the steeply sloping land and poor soil, and the lack of proper roads.

Eltham (St. Ann)

Eight-seven farmers have been settled on this small property of 374 $\frac{1}{2}$ acres, where the average farm size is 4 acres. Tree crops (mainly pimento, ackee, avocado

pear, breadfruit) citrus and limes are the most important crops here. Dairying is also a major activity at Eltham, and most of the milk supply goes to the Bog Walk Condensary. Of the total acreage in crops (377 acres), pasture occupies 228 acres. Success in dairying can be attributed to the Dairy Incentive Scheme which formed a part of the Agricultural Development Programme (1960 - 1962). Under this scheme farmers could receive grants for successfully rearing dairy calves as well as for the establishment of a dairy farm approved by the Health Authorities.

Eltham is a village extension of the resort town of Ocho Rios, and many of the settlers work in hotels and stores in the town. Salaries paid by the hotels are high, and the younger people on the settlement prefer to work as waiters, bartenders, chambermaids etc. instead of being farmers, because the monetary gains as hotel workers far exceed incomes from farming.

The access road to the settlement is paved, but all other driving roads are dirt surfaced. Farmers in the interior of the settlement, nevertheless, have to depend on bridle paths to bring crops from their holdings.

Plate 14 Public catchment tank used for storing rain water. Building in the left foreground houses standpipe leading from the tank. (Photo by N. E. Walters).

Water is obtained from a Parish Council supply; however, as the hotels in the area receive priority only the section of the property close to the main road benefits from this source of supply. This means that farmers in the interior must transport water from standpipes erected at several locations on the settlement, either in large water containers on their heads or by donkey to the holdings. Some have constructed catchment tanks to collect rainfall. (See Plate 14).

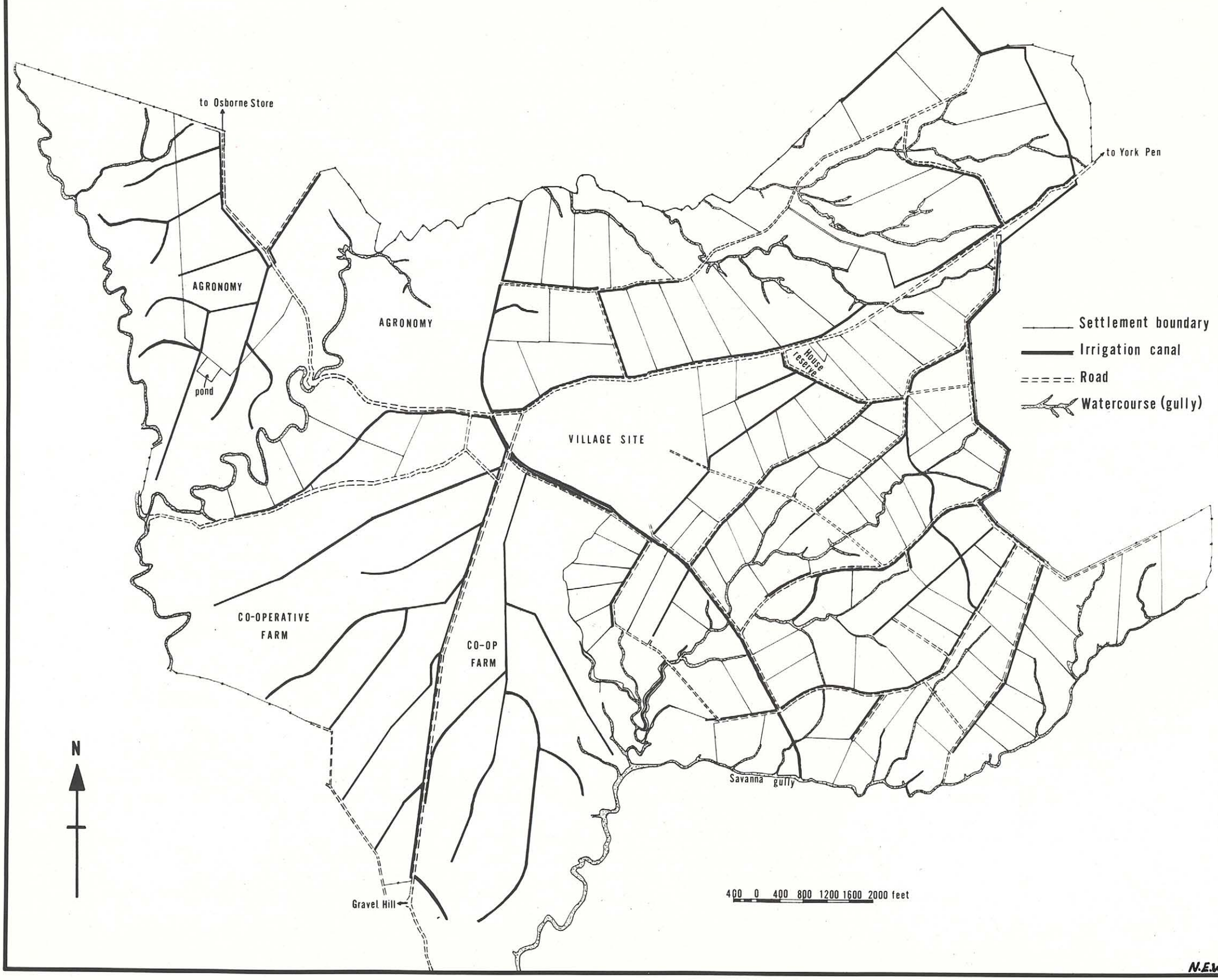
Proximity to Ocho Rios has been financially advantageous to the settlers. Jobs are available at the hotels in the area, and some of them sell their produce to hotel kitchens. However, the attraction of well-paid jobs lures settlers away from farming, and this has curtailed agricultural activities on the settlement to a considerable degree.

C. Central Division

Rhymesbury (Clarendon) [Figure 19]

On this property of 1,970 acres, the holdings, somewhat larger than those on other settlements discussed so far, range in size from 5 to 35 acres. Flat land and deep fertile soil combine to make this area well suited

RHYMESBURY LAND SETTLEMENT
(CLARENDON)



to crop production and the use of machinery. However, the cropping practice at Rhymesbury could almost be called monoculture in that sugar cane, which is the dominant crop, occupies an acreage of 1064 acres. Other crops are of little significance and are cultivated on a very small area of the settlement. There are 8 acres in citrus, 150 acres are devoted to rice, 10 acres to tobacco, and 144 acres have been left in pasture for dairy cattle on parts of the settlement unsuitable for sugar cane production. The four farmers engaged in dairying, sell milk to the Condensary (Bog Walk) and to Royal Cremo Ltd., manufacturers of ice cream, and milk distributors in Kingston.

Favourable location of the settlement in the sugar cane belt of Clarendon, and good agricultural land proved very attractive to farmers, and within four years of being opened up for settlement all the allotments were sold. Not only does sugar cane grow well on the fertile soils, but the crop is also well supplied with water from the Mid-Clarendon Irrigation Scheme (see Plates 15 and 16, also Figure 19). The Government subsidises irrigation facilities since few farmers can afford the high cost of water at £4. 10s per cubic foot. Rice had been introduced as a crop, but most of the farmers

Plate 15 Irrigation canal at Rhymesbury with sluice gates to regulate the flow of water. Canefield in the background. (Photo by N. E. Walters).

Plate 16 Water being pumped into irrigation canal at Rhymesbury. (Photo by N. E. Walters).

producing rice have reverted to cane. This may be attributed to: (a) lack of efficient equipment; (b) higher labour requirements for rice production; (c) the favourable market price for cane; and (d) the greater water needs of rice - 2 cubic yards per acre per year, as opposed to $1\frac{1}{2}$ cubic yards for cane.

Despite the phenomenal demand for land at Rhymesbury, (there were 4,000 applicants for 143 allotments), the settlement has not developed socially. This is due to absentee ownership. Of the 143 allottees, only 14 reside on the property. As a result of this, plans for a village area (shown in Figure 19) had to be abandoned, likewise the proposed co-operative farm.

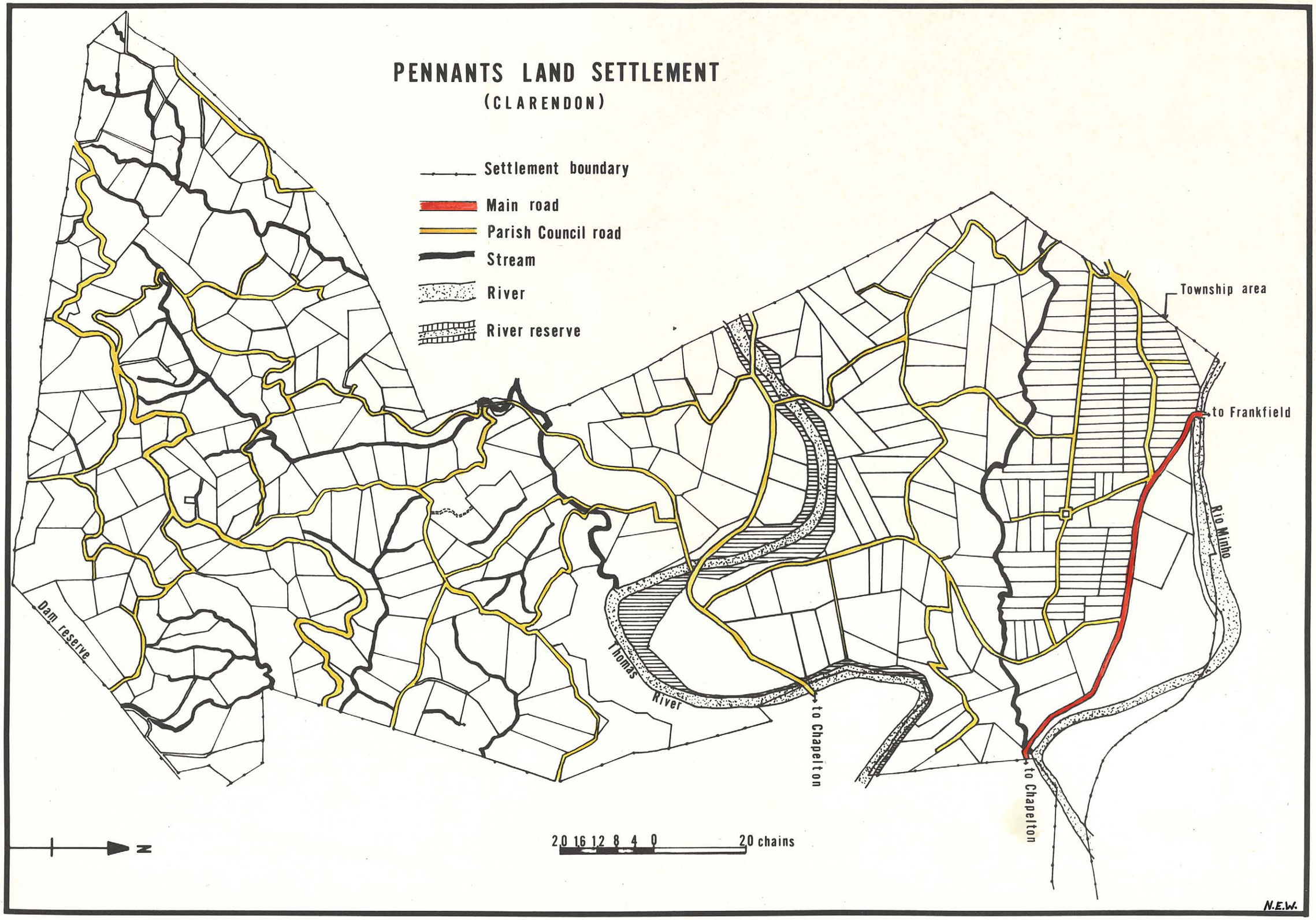
Under the new Land Reform Programme, arrangements are underway to establish dairy farms at Rhymesbury on the land formerly intended as the co-operative farm. The area possesses several features which would favour its development as a dairying settlement. Thirteen and a half miles of good driving roads traverse the settlement, so that movement of equipment and produce would not be difficult. Other features include: (a) the presence of water to facilitate the growth of improved pasture; (b) electricity passing through the settlement for the

establishment of cold storage facilities and use of modern machinery; and finally (c) good road connections to Mandeville (a distance of 36 miles), May Pen (10 miles), Lionel Town (20 miles) and Spanish Town (34 miles). These urban areas would all provide a lucrative market for fresh milk. The Condensary would also be an important outlet produced on the property.

The desire to produce export crops (in this case sugar cane) has been too strong, mainly because Sevens and New Yarmouth Estates (see Figure 13a) are only 14 and 10 miles away respectively. In addition, a crop like sugar cane requires very little attention except at harvest time; therefore, farmers can pursue some other occupation besides farming. It is difficult to see how non-resident farmers will be persuaded to change over to dairying without giving them a very attractive incentive. We feel that this project should have been introduced right at the start of the settlement, before applicants were accepted for participation in the Scheme.

Pennants (Clarendon)

Located in an area where rainfall is well distributed throughout the year, Pennants is a hilly property with two rivers flowing through it. (See Figure 20).


PENNANTS LAND SETTLEMENT
(CLARENDON)
Settlement boundary
Main road
Parish Council road
Stream
River
River reserve
Township area
to Frankfield
Rio Minho
Dam reserve
Thomas River
to Chapelton
to Chapelton
N
20 16 12 8 4 0 20 chains
N.E.W.

There is a limited area of flat land near the main road, which is the site of the township area. The land rises 550 feet in two miles, from 700 feet at the banks of the Rio Minho to 1,250 feet above sea level at the southern boundary of the settlement.

Subdivision of this property was made without due consideration of what size constitutes an economic holding in an area such as this. Consequently, holdings in the 3 to 5 acre size category account for almost 65% of the total number of holdings from 3 - 25 acres, as Table VI-2 shows.

TABLE VI-2

Number of Holdings by Size Group (Pennants)

Size group	Number of holdings
Under 1 acre	147
1 - 2 acres	75
3 - 5 acres	201
6 - 10 acres	57
11 - 15 acres	28
16 - 20 acres	14
21 - 25 acres	11
over 25 acres	2

(Source of data:- Annual Report for Pennants Land Settlement, 1964)

Township area lots account for the number of holdings 2 acres and under (Figure 20).

The majority of settlers are full-time farmers producing sugar cane, citrus, coffee, coconuts and food crops. Sugar cane is the most important crop on the property and occupies 891 acres. Citrus, coffee, coconuts and food crops come next, in that order, and they cover 359, 150, 100 and 82 acres respectively. The largest proportion of the farmers' incomes comes from cane and citrus.

An active Settlers' Association deals with the social as well as agricultural problems. The settlement is part of the Ministry of Development and Welfare 100-Villages project. Although labour shortages are experienced in the area, farmers overcome this problem by partnership help. Water supply in the village area is by pipe-line, and supply for the farms in the interior is obtained from a spring entombment. The annual precipitation (64.28 inches) is sufficiently regular to counteract any shortages in either of these sources. Additional water could also be taken from the Rio Minho and Thomas Rivers which flow through the property.

Markets for the crops produced on the settlement seem to be easily available. Food crops may be sold in Chapelton or Frankfield and citrus to the Trout Hall canning plant near May Pen. There has been no indication however, that settlers receive satisfactory earnings from the small holdings. This perhaps explains the fact that even though the land is hilly, sugar cane is the major crop, cultivated on slopes which are better suited to citrus which can be grown profitably on land having up to 25^{o} slopes. Coffee could be grown on the gentler slopes. The demand for coffee both locally and for export is increasing. Similarly local consumers are buying more fresh oranges, ortaniques, and grapefruits; consequently, there would be little difficulty in selling these fruits. The price of citrus is protected by the Citrus Grower's Association, and farmers receive assistance from the association in the care of their fruit orchards. Farmers growing citrus would not necessarily have to practise monoculture, because intercropping may be introduced 2 to 3 years after the groves have been laid out. Unfortunately, the settlers will not be persuaded to produce crops which take a long time to mature, unless they have enough land on which to cultivate short

term crops in order to reap some benefits from the land while the citrus is maturing.

New Forest (Manchester)

New Forest covers an area of 2,489 acres of which just over 300 acres are in crops. The rest has been left under a grass cover. Such a small cultivated area on relatively flat land is the result of unfavourable natural conditions. The low natural fertility of the red bauxite soils, and insufficient rainfall (35.62 inches - see Figure 5) are effective barriers to productivity. The water supply, limited to a pipe-line which only serves holdings along the main road, is not adequate to counteract the moisture deficiency. To conserve moisture, farmers cover the soil with grass during the driest months.

The main crops cultivated are 'bitter' cassava (a variety of manioc), some food crops, congo peas, escallion, and watermelon, on farms ranging in size from 5 to 10 acres. Escallion is marketed in Kingston, and at the Agricultural Marketing Depot at Bull Savannah, 6 miles away. Watermelons are also purchased by the AMC at a controlled price for distribution to hotels and supermarkets in Montego Bay, Kingston and other urban areas.

Absentee ownership, subdivision of holdings for residential use due to the Kaiser Bauxite operations at Spur Tree, and the water problem discourage successful development of the property both socially and agriculturally. A number of settlers have left the area and emigrated to the United Kingdom, after having either sold or rented their holdings. A few farmers have found employment with the Kaiser Bauxite Company.

With a good water supply and a well-organized marketing system, New Forest could be transformed into a productive vegetable area, and possibly with improved pastures it could also become a good cattle rearing property.

D. Western Division

Knockalva (Hanover)

Originally part of a 4,000 acre cattle property, this settlement is situated in the Limestone Plateau, and exhibits some well-developed characteristics typical of limestone region, viz., rounded 'haystack' hills and depressions (dolines) which have resulted from the wearing down of some of these hills. Two soil types occur on the settlement; a stony, shallow soil derived from limestone, and a deep clay-loam.

One hundred and five farmers have been settled on the 445 acres. Food crops (yams, sweet potatoes) and cane are the major crops on the 3 and 4 acre holdings. Some dual purpose cattle are kept by the farmers to supplement their incomes. The settlement benefits from being close to the Knockalva Agricultural Training Centre where instruction courses are given to farmers in up-to-date farming techniques from time to time.

Social development is fostered by an active Settlers' Association, but according to the President, the effectiveness of the association is handicapped by the separation of social and agricultural activities. No link has been forged between the two most important features of land settlement. This is responsible for the movement of young people from the area. Organized games will not keep the youth on the settlement if it is clear that farming does not meet the economic needs of the population.

Farmers face other problems particularly in connection with the cultivation of their crops. The infrequency of visits by the Agricultural Extension Officer for the area has meant that farmers do not become sufficiently aware of the best methods of farming, even though

many of them are anxious to improve their holdings in order to get more profitable crop yields.

Despite the fact that the farmers on this settlement take advantage of every opportunity to increase their knowledge of farming, progress is hampered by insufficient land for cultivation. A number of settlers discourage their children from becoming farmers, as they have learned that the poor results and unsatisfactory earnings do not justify the effort and money invested in their holdings.

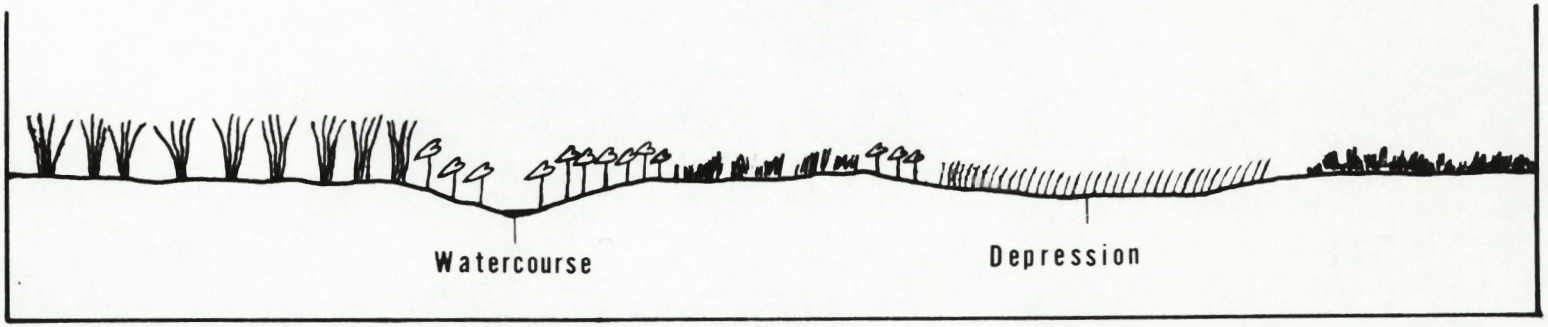
Bath Pen (Westmoreland)

Bath Pen has been chosen to illustrate the influence of large plantations on the agricultural activities of settlement schemes, and also to show that settlements associated with estates are often located on marginal land.

This property of 200 acres is situated about 2 miles from the town of Savanna-la-Mar, the capital of Westmoreland. Although the land is flat, the shallow soil and rocky outcrops on the surface limit the acreage that can be used for cultivation. This explains why the property remained undeveloped except for unimproved

FIGURE 21

DIAGRAMMATIC PROFILE SHOWING LAND UTILIZATION IN BATH PEN, WESTMORELAND



Sugar cane Dascheen Grass Rice

N.E.W.

FIGURE 21

pasture, although it was part of the estate owned by the West India Sugar Company.

Sugar cane, corn and rice are the principal crops, with dascheen in the poorly drained sections and close to water courses. Rice is cultivated in depressions which will retain water more readily than other parts of the settlement (Figure 21). Most of the rice is produced by East Indians whose large families provide the labour required for rice production. The other settlers seem to dislike working in the flooded fields.

A village area has been reserved, but few people reside on the settlement. Some settlers have built houses which they rent to the townspeople, claiming that by doing this, they are assured of a regular income greater than the amount that could be earned from farming. Farmers also work in Savanna-la-Mar or on the WISCO estate at Frome to supplement their incomes from farming. All the cane produced here is sold to the factory at Frome on a contract basis. Money received from sales of cane is used to pay for the holdings.

It is more than likely that the settlers of Bath Pen will continue to produce cane because of its small labour requirements; in addition, the income from cane

is more substantial than that which could be obtained from attempting to grow other crops.

Camp Savannah (Westmoreland)

Originally part of Frome Estates, this scheme embraces an area of 1,171 acres on which 507 farmers have been settled. Before acquisition the property was heavily tenanted, so that security of tenure was the foremost consideration when allotting the land. The majority of holdings are devoted to the production of cane, with some cultivation of food crops (bananas and yams) on the hillier interior sections. The average size of the holdings ranges from 3 - 5 acres, too small to produce sugar cane economically. However, proximity to the WISCO sugar estates (Frome), and relatively flat land available on the holdings near the entrance to the property, have encouraged farmers to concentrate on cane. The reasons quoted before to explain the preference for cane apply to Camp Savannah as well. The farmers who cultivate this crop do not have to cope with the uncertainty of markets and fluctuating prices which obtain for food crops, because the estate will always accept their cane.

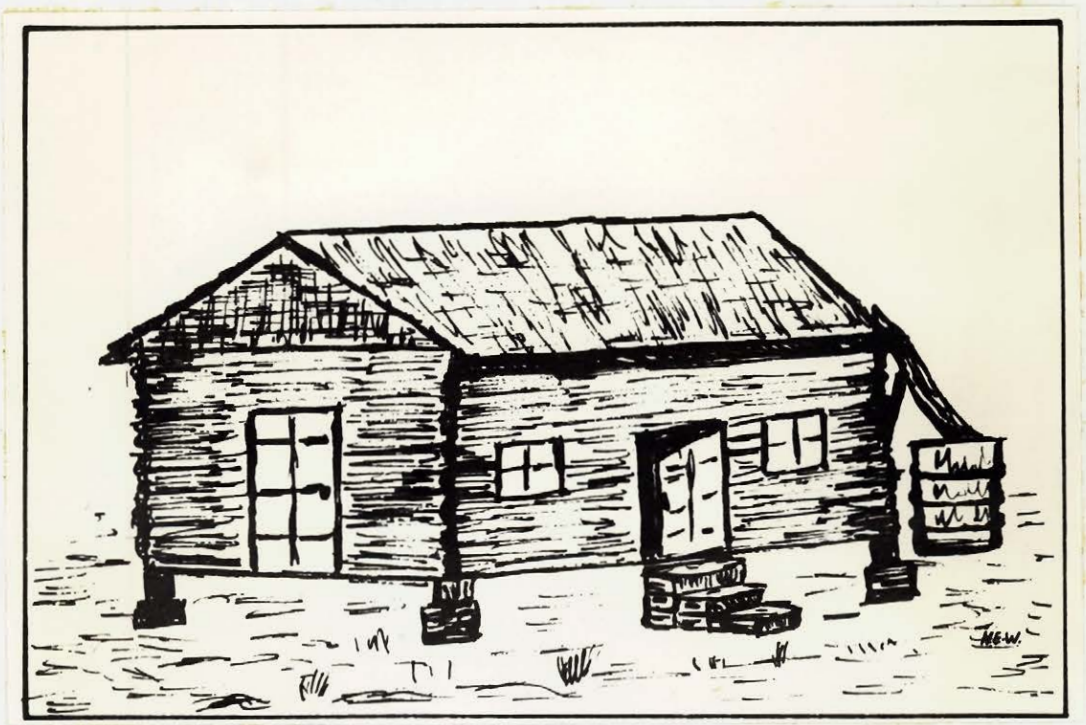


Plate 17 Movable house typical of the rural areas in the Western parishes. The house is a wooden construction set on stone piles, and is hauled away by truck when the inhabitants wish to move to another location. Asphalt drum (at right) used for storing water collected from the roof.

The township area of Camp Savannah is adjacent to the town of Grange Hill and accommodates its overflow population. It is the general practice for settlers in Camp Savannah to rent portions of their holdings to outsiders for house space. It is not uncommon to see two or three houses on the same township lot. House space in these parts can be rented as some houses are constructed so that they can be moved from place to place (Plate 17).

The roads on the settlement are motorable but unpaved, and there are a few bridle tracks in the interior of the settlement. The water supply is obtained from springs in the interior, stand-pipes, and a piped house-to-house supply in the township area.

The effect of the large sugar estate is well illustrated in Camp Savannah. The estate influence has a deterministic quality, in that settlers are attracted by a crop that is readily disposed of, and have no choice but to cultivate sugar in view of the poor returns which are obtained from any other crop. Therefore, the cultivation of crops better suited to large-scale production is perpetuated among small farmers.

Plate 18 Sugar cane fields at Hyde and Gibraltar. All the flat land in the area is used for production. (Photo by N. E. Walters).

Plate 19 Stony limestone hillock used for goat pastures because of its unsuitability for sugar cane cultivation. Sugar cane in the foreground. (Photo by N. E. Walters).

Hyde and Gibraltar (Trelawny)

A large percentage of the cultivable area of this 4,000 acre settlement is devoted to sugar cane (Plate 18) although there is some livestock and poultry rearing, as well as small plots of vegetables and fruit. 1,700 acres belong to the Department of Forestry, while the rest has been allotted for settlement with holdings ranging in size from 5 to 20 acres. Most of the settlers live in Clark's Town which is less than $\frac{1}{2}$ mile away, and the settlement also abuts on the 4,078 acre property of Trelawny Estates Limited. Due to its proximity to Trelawny Estates, the settlers produce sugar cane except where the land is too hilly or stony. One farmer rears goats on the stony hillsides which cannot support canes (Plate 19). Other enterprises are insignificant - livestock rearing is done by only two farmers, pineapples are produced on 2 farms, while 20 farmers engage in poultry rearing. Labour problems in the case of pineapple farming, and lack of a market for the poultry farmers successfully discourage farmers from investing too heavily in these enterprises.

As far as sugar cane production is concerned, the farmers experience little difficulty because they are assisted by Trelawny Estates in establishing the crop,

and are contracted by the estates to supply a certain amount of cane every season. Technicians from the estate give the farmers expert instruction in preparing the land, fertilizer is available at a special price, and assistance is even given for purchasing equipment (truck or tractor) with loans repaid when the farmer delivers the cane to the estate. Transportation is easy since the settlement is close to the sugar factory, and for those farmers who have no trucks, the estate arranges for the movement of the crop.

Farming is not a full-time occupation; therefore it is possible for some settlers to find other employment. Most of them work on the estates during "crop" (1) and approximately 33% are employed after "crop". A few of the settlers have been so successful from cane production that they can afford to travel back and forth from the United States or Britain.

Social activities are limited mainly because so few farmers reside on the settlement. However, the Home Economics group formed among the wives of the

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(1) "Crop" is the term used to denote cane harvest which lasts for 4 or 5 months ending in April or May. Cane requires most labour during this season because the cutting is done almost entirely by hand.

settlers, has been trying to raise funds for a permanent Community Centre. The Sugar Welfare Board officer assists with social development by training settlers in needlecraft, basketry and cookery.

All the settlement roads are motorable, but the poor condition - pot holes and uneven surfaces - of many of them attests to the inadequacy of Parish Council maintenance. The piped water supply is very irregular, and as there are no surface streams in this limestone region, the settlers construct tanks for storing rain water.

The dominance of sugar is well demonstrated in this area, but the favorable production conditions, good market arrangements, and high profits will continue to encourage its persistence as a major crop.

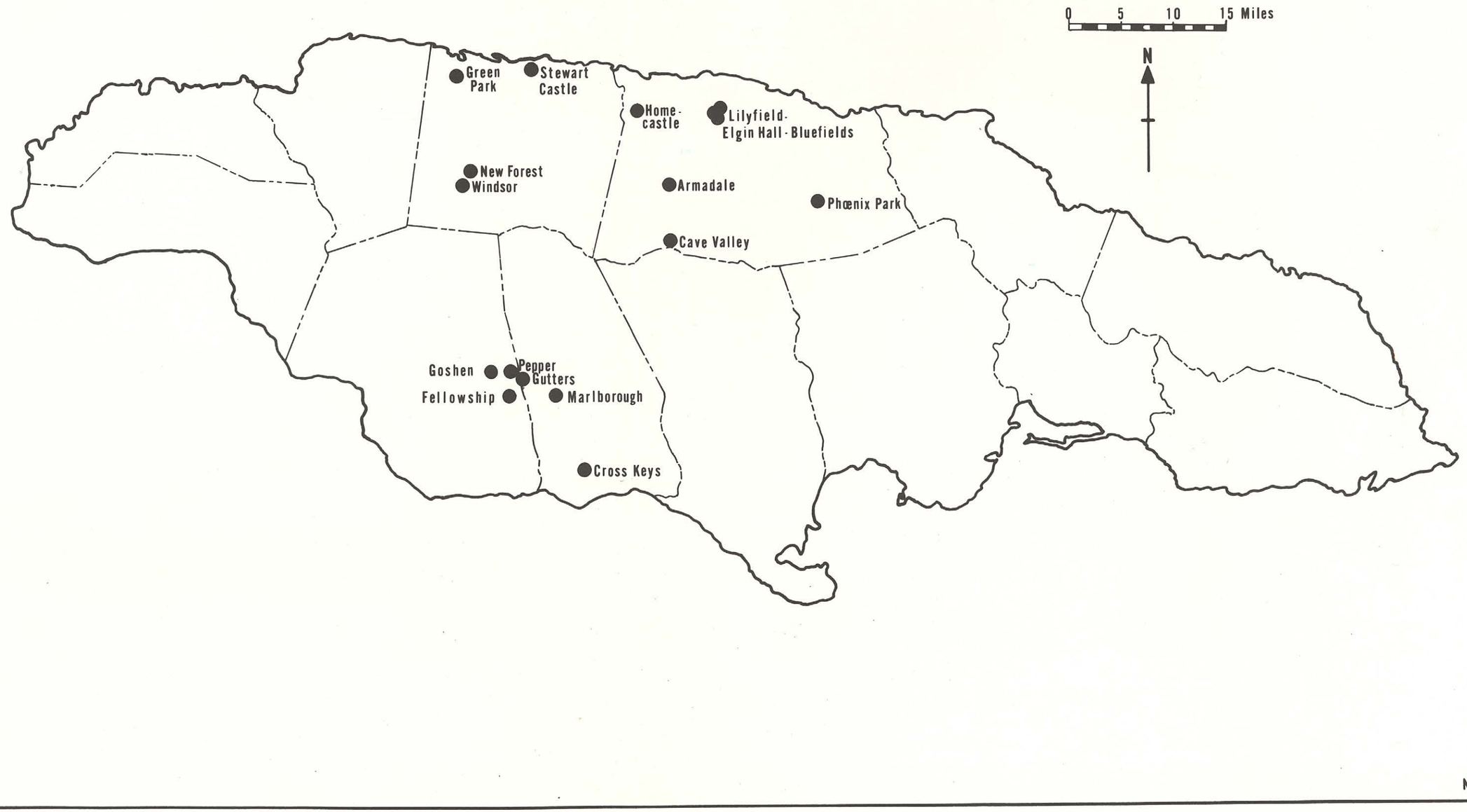
Bauxite Resettlement Schemes

For purposes of comparison, it is perhaps useful at this point to make a few observations with respect to the Kaiser Bauxite resettlements. Figure 22 shows the location of these settlements.

In many cases the problems on these resettlement schemes are similar to those on Government Sponsored

JAMAICA

BAUXITE RESETTLEMENT PROPERTIES



N.E.W.

Land Settlements, but they may be attributed to different reasons arising from the initial purpose for which they were established. These resettlement schemes were established primarily to settle small farmers displaced by the mining activities of the Kaiser Bauxite Company which, because it started its operations much later than Reynolds Jamaica Mines Ltd. or Alcan, had to purchase lands already occupied. It was necessary then to relocate these farmers, and the Company tried to find land which was as good as or even better than that previously farmed.

Properties offered for resettlement are thoroughly investigated before being accepted by the Company. A land capability survey is carried out and the land assessed on the basis of (a) existence of a favourable percentage of arable land; (b) depth of top soil; (c) amount of rainfall; (d) accessibility, and (e) suitability of the surface for road construction. When all the requirements are satisfied, the property is subdivided and the roads laid out in such a way that all the lots open on to the road to facilitate movement of people and crops. According to the arrangements which the resettled farmers make with the Company, houses are erected and ready for occupation when the settlers take possession. (See Appendix D)

Plate 20 Air photograph showing location of New Forest and Windsor. (Hunting Surveys Ltd.)

A major problem on resettlement properties is absenteeism, due to the reluctance on the part of settlers (who have lived for many years in a certain area), to move to the resettlement scheme. People from the same area try to obtain lots close together in the new location. Most of the farmers from St. Ann who have received land in Trelawny have not moved to their new holdings. Those who have transferred find orientation a major problem as they are separated from the community in which they spent a large portion of their lives.

The relative inaccessibility of a few settlements, such as Windsor (see Plate 20) inhibits full agricultural and social development. Although the property is well traversed by motorable roads, Windsor is not located on the regular bus routes which pass through the parish. Local bus services only extend as far as Sherwood-Content (more than 6 miles distant), thus it is difficult for settlers to get in and out of the settlement. The farmers, many of whom still reside in St. Ann, visit their holdings once a week for 2 or 3 days to check on the crops and perform the necessary chores. Some lots have never been visited and have subsequently become ruinate. The township area of Windsor

Plate 21 View showing part of Phoenix Park, St. Ann. Note the steep hillside. (Photo by N. E. Walters).

Plate 22 Land cleared for cultivation, Phoenix Park. The shallow, stony soil is unsuitable for farming and is very susceptible to erosion. (Photo by N. E. Walters).

is now overgrown with bush and scrub, although houses were constructed for the settlers.

The presence of sugar estates in the area has influenced the crops produced here. The thinking of small farmers in Trelawny, a parish of large properties, is obviously dominated by the sugar estate - the term "plantation mentality" may be used to describe their attitude. Lands in Windsor, Green Park, and New Forest are devoted entirely to cane production; farmers have signed 3-year contracts with Trelawny Estates to supply the sugar factory with canes. Hence the reluctance to produce any other crops for which the market is uncertain. Steep slopes and rocky soils on certain settlements, e.g. Phoenix Park (Plates 21 and 22) limit the types of crops which can be produced, but this problem is not confined to Land Settlements; it is a typical feature of farming in Jamaica.

However, as the observations in Appendix D show, resettlement properties have been more successful in the production of crops to supply the local demand. The Bauxite Company works with the Ministry of Agriculture and Lands in the field of agricultural development, and on the properties with a resident population the

Plate 23 Peasant Farm at Lilyfield, St. Ann. Note divided fields separated by barbed wire fencing. Field in right background is improved Pangola grass pasture. (Photo by N. E. Walters).

Plate 24 Small farm in Lilyfield showing orderly arrangement of crops - yams in right foreground; sweet potatoes, centre; Pangola pastures in background. The trees to the right of the yam field include citrus (orange), breadfruit, avocado pear and other fruit trees. (Photo by N. E. Walters).

company's agricultural officers conduct field days to demonstrate improved agricultural techniques. Plates 23 and 24 illustrate the tidy appearance of farms using up-to-date methods. Competitions arranged on the settlements provide the necessary incentives for the farmers to increase land productivity. Settlements at Crosskeys (St. Elizabeth), Goshen (St. Elizabeth) and Armadale (St. Ann) have been involved in 3-year programmes of development, in which farmers receive incentive payments of Ł50 in the first year, Ł75 in the second year and Ł100 in the third year if certain standards of production are maintained. This practice has been invaluable to the promotion of agricultural development and farmers on these settlements have achieved good results.

From the above analysis, several features common to all Government Land Settlements and to some Bauxite resettlements emerge. A detailed résumé of these characteristics and the intrinsic problems of Land Settlements will be made in the next chapter. However, it is pertinent at this point to list briefly the existing problems regarding the fullest development of the Settlement Schemes discussed in this chapter and in Appendix C,

namely:

(1) uneconomic farm size,

(2) small percentage of arable land on many of the holdings,

(3) insufficient water supplies,

(4) poorly developed marketing systems for local crops,

(5) absentee proprietorship,

(6) concentration on export crops and

(7) the influence of adjacent urban areas.

CHAPTER VII

SUMMARY

An examination of Jamaican agriculture and Land Settlement reveals several interesting features which explain in part the interrelation of the two phenomena. The characteristics of the island's agriculture cause many of the problems inherent in Land Settlement. In this chapter a summary of the typical features of agriculture in Jamaica will be made, followed by a résumé of the problems of Land Settlement. The concluding chapter will explore the relationship mentioned above by evaluating the role of Land Settlement in the agricultural sector of Jamaica's economy up to the present. Then certain projections will be made in order to show how this role can be expanded to further agricultural progress in Jamaica.

A. General characteristics of Jamaican agriculture

1. The present pattern of agriculture is a result of the interaction of historical and geographical influences. The dominance of plantation (estate) agriculture in the low-lying, fertile alluvial plains and basins is a historical fact. But it is also geographical insofar as these areas satisfied the ecological re-

quirements of sugar production. Similarly the concentration of peasant agriculture in the more marginal areas, on the steeply sloping hillsides both in the limestone plateau and the interior mountain ranges, is a product of history as well as geography. The peasants only had recourse to the rugged and hilly areas, because the limited flat land ideally suited to the growing of crops was no longer available once the plantations were established.

2. Plantation agriculture has influenced peasant agriculture to the extent that a large percentage of peasant farmers prefer to cultivate export crops for which the market is assured. (See Appendix C).

3. The "one-crop" mentality noted in (2) above is also a result of the undeveloped markets for food crops produced by the small farmers.

4. The persistence of destructive agricultural practices - shifting cultivation, burning of vegetation etc., has produced widespread erosion and depletion of soil fertility.

5. Farmers are unwilling to adopt new farming techniques, either because of insufficient funds to finance changes, or because they prefer to continue with outdated

methods which are a hold-over from the days of their ancestors.

6. Many Jamaicans regard farming with contempt. It is considered a degrading occupation, and few young people take up farming as a means of livelihood. A high proportion of small farmers in Jamaica are middle-aged (over 45 years).

7. The attitude noted in (6) may be attributed in part to the fact that most small farmers in Jamaica today find it extremely difficult to earn a satisfactory income from farming and encourage their children to find other forms of employment.

8. Good agricultural land is at a premium in Jamaica, and many of the existing holdings have been so fragmented that they cannot provide full-time employment for the small farmers.

B. Specific problems of Land Settlement Schemes

The characteristics listed above are all applicable to Land Settlement Schemes, but there are several features peculiar to Land Settlements which should be noted separately.

Plate 25 Small peasant holding on sloping land. Cultivated area limited by the steepness of the land and also by sinkhole to the right of the field. (Photo by N. E. Walters).

1. The size of holdings on many schemes is too small and therefore uneconomic.

2. Settlement Schemes are located on poor land with steep slopes and shallow soils, so that sometimes as much as 40% of the land is uncultivable (Plate 25). In a significant number of cases, Settlement Schemes are marginal to large properties or estates.

3. Basic facilities - roads, water supply, electricity - are either inadequate or non-existent.

4. Too many farmers concentrate on the production of export crops rather than on crops for the local market.

5. Farmers lack sufficient capital to develop their holdings properly.

6. A number of settlements are inaccessible. They are often far from urban centres and have a road network that is too poor to allow for the economic transportation of crops.

7. Absentee ownership prevents the growth of a stable community on many settlements, and as a result agricultural development is seriously handicapped.

8. A number of people who have no interest in, or ability for farming have been allowed to participate in Settlement Schemes.

9. Settlement Officers and Agricultural Extension Officers are frequently out of touch with the real problems of farmers on Settlement Schemes.

10. Marketing is poorly organized; therefore settlers find it difficult to sell their produce.

11. Settlements adjacent to urban areas are fighting a losing battle with residential and commercial demands and the attendant rising real estate values.

CHAPTER VIII

CONCLUSION

Most of the inherent problems of Land Settlements enumerated in Chapter VII can be related in some way to the state of agriculture in Jamaica, and may also be attributed to the fact that the role of Land Settlement in the agricultural sector has never been properly assessed. Ever since its inception, the Land Settlement Programme has concentrated on making land available to as many people as possible for settlement; and the few efforts that were made to relate Land Settlement to agriculture, in order to establish its specific functions in programmes of agricultural development, have been hopelessly inadequate.

The claim that agricultural development is emphasized on Land Settlements is not supported by the evidence visible even to the untrained eye. Soil erosion continues, domestic food crop yields remain at a low level, and settlers have to resort to the production of export crops in order to make an adequate yearly

income.[1] Furthermore, many of the small farmers must find alternative sources of employment to supplement their earnings.

If Land Settlements are to be of value, then it is imperative that they should be considered an integral part of all agricultural programmes. Instead of increasing the number of schemes, every effort should be made to rehabilitate existing schemes as far as possible, although it is sometimes difficult to change a way of life that has been in existence for as many years as some of the settlements.

Hillside farming in Jamaica is an inescapable fact because of the island's topography. This cannot be changed, but the use that is made of the land can be guided into more productive channels; therefore, advanced methods of hillside agriculture should be introduced so that production may reach the highest possible levels.

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1. Export crop production, however, is governed by world market prices. A decrease in sugar price has an almost immediate effect on sugar cane acreage. Competition from other sugar and banana producing countries also affects Jamaican production of these crops. On the other hand, with an expanding tourist industry and a growing manufacturing sector, new markets for domestic crops are created. Consequently, an increase in local food production could tap these markets which are now supplied mainly by imported foodstuff.

How can this be done? The obvious answer to this question is through Land Settlement Schemes. They should be the instruments of agricultural change, and serve as models for the peasant farmers in surrounding districts. If this is the role of Land Settlement, careful attention must be given to the location of schemes, the choice of settlers, the provision of essential services such as water, roads, and electricity and marketing. Political considerations should not be an important factor in decisions regarding the location of settlements. The chief locational factors should be (a) the situation of the Settlement Scheme with reference to urban areas as potential markets for crops; (b) whether or not the site is suited to intensive cultivation of crops; and (c) whether the basic facilities can be installed without undue difficulty.

Farmers selected to live on Land Settlements must acquiesce to certain conditions stipulated on a contract. Only skilled farmers should be accepted as participants and they should be prepared to reside on the Settlement, since it is much easier to organize co-operatives for marketing and purchase of equipment when

there is a resident community of farmers. Agricultural education will also be greatly facilitated as a stable community can develop only where all farmers work together for the common good.

Strict controls are necessary for the achievement of a stable agricultural community. Therefore, one agency should be concerned with the administration, organization and development of Land Settlements. This role may be assumed by a Land Authority or perhaps the Lands Department should relinquish all other tasks which it now performs, and devote itself entirely to Land Settlements.

Farms should provide full-time employment for the settlers thus ensuring a satisfactory income.[1] The size of holdings must therefore be of an economic size with a farming system well adapted to the geographical conditions of the area. It has been pointed out that although "the concentration of land in the hands of a few is regrettable, the proliferation of microfundia was disastrous" (Rodriquez-Caberra, 1963). It is only in

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1. Establishing the level of this income is beyond the scope of this thesis. However, the Land Reform Programme has suggested that an average net income of £8 or £9 weekly should be considered adequate to meet the needs of the small farmer and his family.

recent years that this has been realised in Jamaica, hence the continuing allotment of holdings in sizes averaging 5 acres or less. The Daily Gleaner (October, 26, 1964) carried the following statement: ... "the days of creating uneconomic non-viable units which do not afford farmers either full employment or sufficient earnings are passed." The Land Reform Programme recently put into operation in Jamaica proposes to establish more medium-sized farms (15 to 30 acres in size) and has declared that no holding on Land Settlements will be less than 5 acres. Small holdings in future will range from 5 - 14 acres "depending on location, type and quality of land, enterprises suitable to the environment and avenues of market disposal." This is something which ought to have been recognised long ago especially as the Land Settlement Programme has been in effect for more than 28 years.

A mixed-farming system (advocated by Jolly, 1956, as a good system of farming for the small farmer in the West Indies) will be established on these holdings, where farmers will be able to earn a satisfactory income from the production of export crops, local root-crops and vegetables, a few livestock and some tree-

crops, as well as subsistence crops grown for family use. Careful zoning of crops will have to be followed to ensure the success of the mixed-farming system in Jamaica, as the influence of the relief on agriculture cannot be ignored. Appendix F shows a crop zoning system advocated by Dumont (1963), which may be adopted by the Ministry of Agriculture and Lands as the basis for farming on Land Settlements and eventually throughout the island.

The newly established Agricultural Marketing Corporation (Economic Survey, Jamaica, 1963) is a step forward in improving marketing conditions. The ultimate goal is the opening of purchasing depots all over the island, so that farmers can sell produce at a standard price. Local food production will expand rapidly if farmers can be assured of a steady market for their crops.

The future of agriculture in Jamaica lies not in the expansion of export crops (although these provide an important source of income for the country), but in increased production of food crops and vegetables to meet the local demand, which must now be satisfied by large food imports.

Agricultural production among the small farmers has decreased in recent years although a great deal of money has been spent on agriculture. Rehabilitation of agriculture in Jamaica is sorely needed and there is no doubt that the desired improvement will only come through an improvement of the present standards of agriculture among the small farmers. It is therefore incumbent upon the Land Settlements to set the pace for agricultural development. However, although there is a pressing need for increased food production to meet the demands of a rapidly expanding population, proper development of Settlement Schemes must not be sacrificed on the grounds of expediency. The Daily Gleaner of October 21, 1965 carried an announcement by the Minister of Agriculture and Lands to the effect that 27,500 acres of Government land was to be distributed to farmers before providing roads, water supplies and other basic amenities, in order to speed up agricultural production. Such an action defeats the purpose of the Land Settlement Programme and will only cause a regression in agriculture, which must be guarded against at all costs.

Social as well as economic improvements are essential to the proper functioning of Land Settlements

in Jamaica, therefore, the importance of adjusting man-land relationships cannot be too highly stressed. Careless and ill-advised use of the land leads to an inferior standard of agriculture which in turn produces depressing economic conditions. At present, the small farmer in Jamaica shows little pride in his occupation, and this lack of pride is a hindrance rather than a help to agriculture. He must somehow be taught that land cannot produce well if it is not properly utilised. The land should be viewed as a national asset and not as a private commodity to be used in whatever way one pleases.

Success or failure of Jamaican agricultural development in years to come is in the hands of the producers of domestic food crops - i.e. the small farmers, who must produce enough to supply the demands of the comparatively new industrial sector, the tourist industry and the rapidly increasing local populations.

It is the author's view therefore, that Land Settlement Schemes should be "pilot areas" where farmers receive education in farm management, and are encouraged to adopt improved farming techniques in order to increase crop yields. They should demonstrate to other farmers

throughout the island that a small farm can provide full-time employment and a higher economic standard than hitherto enjoyed by most small farmers, because the land is being utilised in the best means possible. Only when this happens can the small farmer recover his self-respect.

In conclusion, the functions of Land Settlement are obvious. Not only must it involve land tenure adjustments although these are necessary, but,

> ... it must be recognized that land reform is not a cure-all and that it can be productive of social and economic benefits only as a part of comprehensive programs of development. (Parsons, 1963; p. 20)

In the past, Land Settlement in Jamaica was conceived primarily as a means of social reform; however, any programme of this type in order to be effective must engender economic improvement. This means that agricultural development and the Land Settlement Programme should be integrated, giving careful thought to all the factors which affect farming in Jamaica. Emphasis must be given to all the factors influencing location of settlement and consequently, to the types of crops and methods of cultivation to be adopted.

Attempts have been made in a previous chapter to show the relationship between the distribution of large properties and the location and size of Land Settlement Schemes. (See Chapter VII, Part A, 1 and 2; also see Figures 13(a) and 13(b)). Although it is difficult to make a positive correlation between the location of large properties and that of Settlement Schemes, yet one cannot discount the effect that these estates have had on the cropping practices on the settlements.

Even more important is the influence of the physical environment - notably relief, and its effect on climate, determining the types of crops which may be cultivated profitably in different parts of the island. The significance of relief cannot be too highly stressed, since hillside farming is as much a part of the Jamaican agricultural scene as the large sugar or banana estate.

Consequently, agricultural development within the Land Settlement Programme should be organized to take advantage of all the existing possibilities and also avoid some of the difficulties created by the above mentioned factors. Thus Land Settlement Schemes would become areas of agricultural progress, demonstrating

by good organization and careful planning that economic improvement can be achieved through maximum use of the available resources.

APPENDIX A, Table A-1

Progress of Land Settlement in Jamaica, 1920-1961

Year	No. of Properties	Acreage Acquired	Acreage Allotted	No. of Holdings
1929 - 30	3	8,542	7,036	1,193
1931	4	2,089	1,932	369
1932	2	2,178	1,869	268
1933	2	989	713	139
1934	3	2,396	1,892	786
1935	1	342	326	128
1936	3	4,406	3,792	627
1937	4	5,354	4,100	991
1938	9	7,439	7.118	1,396
1939	33	36,084	30,670	6,415
1940	32	26,837	22,087	4,933
1941	2	818	436	97
1942	2	1,009	703	173
1943	3	4,353	2,414	542
1944	2	1,948	1,707	409
1945	1	921	856	138
1946	6	10,118	7,549	1,538
1947	9	9,845	7,509	1,792
1948	15	20,931	17,004	4,141

Year	No. of Properties	Acreage Acquired	Acreage Allotted	No. of Holdings
1949	1	578	522	93
1950	3	1,978	1,792	691
1951	2	2,399	2,155	499
1952	Nil	Nil	Nil	Nil
1953	Nil	Nil	Nil	Nil
1954	6	1,877	1,692	521
1955	1	489	457	90
1956	5	5,524	3,728	803
1957	8	3,967	3,030	737
1958	9	4,176	2,433	621
1959	7	3,889	2,431	670
1960	3	582	5,928	1,545
1961	8	4,005	1,521	298
Grand Total	189	176,073	145,403	32,643

Note: The acreage allotted in any one year does not correlate with the acreage acquired in the same year, as properties are not usually subdivided in the year they are purchased. Also note the large number of settlements established in the years 1939, 1940 and 1948.

Source: Land Reform in Jamaica with Emphasis on Land Settlement. Division of Economic Statistics, M.A.L., 1962.

APPENDIX B

Estate	Acres in Cane	Tons Cane per Acre	Other Enterprises
Appleton St. Elizabeth	2,667	28.77	Nil
Barnett St. James	1,064	34.50	Cattle
Bernard Lodge St. Catherine	6,635	33.23	Bananas, Citrus
Caymanas St. Catherine	4,072	37.85	Cattle, Bananas, Corn, Horses, Coconuts
Frome Central Westmoreland	12,734	32.10	Cattle, Cocoa
Gray's Inn Central St. Mary	1,870	28.75	Cattle, Coconuts
Hampden Trelawny	2,797	27.47	Cattle, Cocoa
Holland St. Elizabeth	1,069	25.43	Nil
Innswood St. Catherine	2,743	42.75	Citrus
Jamaica Sugar Estates St. Thomas	3,634	36.37	Cattle, Milk
Monymusk Clarendon	17,189	33.90	Cattle
Richmond Llandovery St. Ann	1,565	33.89	Cattle, Coconut
Serge Island St. Thomas	2,234	27.93	Cattle
Sevens Clarendon	3,012	36.40	Cattle, Citrus

APPENDIX B

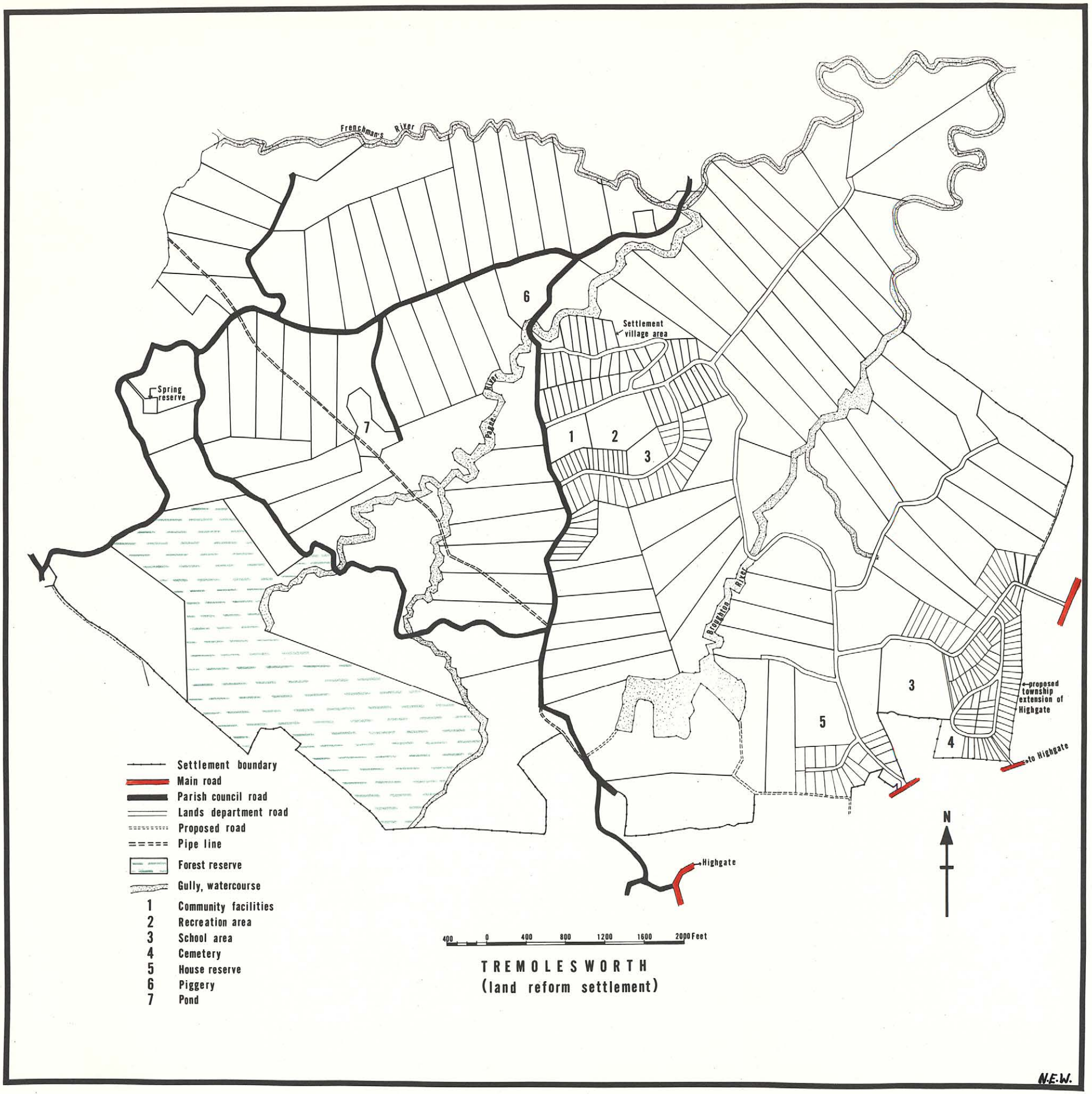
Estate	Acres in Cane	Tons Cane per Acre	Other Enterprises
Trelawny Estates Trelawny	4,078	30.72	Cattle, Sisal, Corn
United Estates St. Catherine	824	34.61	Cattle, Citrus, Banana, Milk
Worthy Park St. Catherine	1,429	32.37	Cattle, Citrus
New Yarmouth Clarendon	1,282	40.16	Nil

NAME OF SETTLEMENT	AGRICULTURAL ENTERPRISES	OBSERVATIONS
Norbrook, (St. Andrew)	Vegetables	Access to the property is difficult - there is no road. Very steep slopes. No water, farmers must bring water to their crops from approximately three miles away, travelling uphill all the way.
Law River, (St. Thomas)	Carrots, pimento, mixed food crops, limes.	Very poor roads, limited access. Interior of the settlement reached by bridle paths. Water for domestic purposes supplied from an entombed spring. Rainfall uncertain - great variability. Fertile soils, but rapid changes within relatively short distances. No social activities because of constant movement of people. Lack of roads hamper the sale of crops. Area is best suited to the production of food crops but settlers cultivate sugar cane. The development of this property will come only when proper roads are installed.
Rosehall, (St. Catherine)	Cane, citrus, bananas	There are driving roads within the settlement, but access from the main road to some lots is limited. Property abuts on the town of Linstead; the water is obtained from the town supply. The cane produced is sold to United Estates (Bybrook), and the citrus to the Bog Walk factory. Lack of labour and haulage problems hamper

NAME OF SETTLEMENT	AGRICULTURAL ENTERPRISES	OBSERVATIONS
		progress. The 10 and 20 acre lots are being subdivided for housing. Supplementary income from employment at Alcan works, citrus and sugar factories.
Treadways, (St. Catherine)	Citrus, cane, mixed food crops, poultry	Settlement well supplied with roads, depends on Parish Council piped supply and on rainfall for water. A fairly prosperous settlement. Settlers Association very active. The settlement owns 2 tractors and 2 trucks, therefore transportation of crops is no problem. With community effort a fairly elaborate Community Centre has been constructed.
Chudleigh, (Manchester)	Food crops mainly Irish potatoes, dairying, bananas, corn, vegetables - carrots, peas, lettuce, cabbage	Very progressive settlement bordering on the town of Christiana. Well serviced by roads, and electricity. This settlement is located in the Christiana Land Authority Area and has adopted modern agricultural practices, hence the good results.
Grange Hill, (Portland)	Bananas, coconuts, pimento limes and mixed food crops	This settlement was previously a banana-coconut-cattle property, heavily tenanted. Established to provide these tenants with security of tenure. Most

NAME OF SETTLEMENT	AGRICULTURAL ENTERPRISES	OBSERVATIONS
		of the settlement is cultivable, having only 5 acres of ruinate land. Land types vary from level and fertile to undulating and rocky. Limestone area. Water supplied by Parish Council pipeline, but the system is overloaded due to short-sighted planning by the Council. Roads are not completely developed and are therefore a setback to agricultural development. Some Ex-servicemen on this settlement create problems and refuse to follow the advice of the Settlement Officer.
Mocho, (St. James)	Bananas, yams, sugar cane	Settlement serviced by gravel suffaced roads which are in very poor condition, particularly when it rains. Settlers depend on rainfall for water supply. Formerly a heavily tenanted cattle property. Located in a limestone area, with fertile brown loam and red soil in the poljes. Although the settlement has only been in operation for 4 years it is almost completely settled. Problems which retard agricultural progress arise mainly from the nature of the physical landscape. The land is subject to erosion and land slips, and needs carefully applied conservation measures. Some attempt is being made at diversification with the introduction of citrus and coffee.

NAME OF SETTLEMENT	AGRICULTURAL ENTERPRISES	OBSERVATIONS
Tremolesworth, (St. Mary)	Not settled at the time of field work - was a banana property, still producing this crop. When the property is fully developed, the farmers will be encouraged to engage in a mixed-farming system based on livestock and food crops.	This is one of the new Land Reform Settlements. The roads are still under construction. Figure 23 shows the design of the settlement. The Village area is being located in the centre of the property in order to facilitate the establishment of essential services - e.g. water, electricity and other community needs. 104 acres of this property has been reserved for Watershed protection. Streams flow through the settlement, but the river reserves are the property of the Lands Department, and no priority is given to farmers unless specified in the titles. 1 acre is reserved for a Farm Implement Pool to be administered by the Agricultural Development Corporation. Middle income residential lots have been provided near the main road to absorb expansion of the town of Highgate. The land varies from level to rolling.
Bounty Hall, (Trelawny)	Sugar cane	Level lands with deep fertile soil. Three-year old settlement which was formerly a sugar estate. Settlement established to provide tenants with security of tenure. Sugar cane is the only crop grown, but the Agricul-


Frenchman's River
Spring reserve
6
7
Settlement village area
Pagee River
1
2
3
Broughton River
3
5
4
proposed township extension of Highgate
to Highgate
Highgate
N
Settlement boundary
Main road
Parish council road
Lands department road
Proposed road
Pipe line
Forest reserve
Gully, watercourse
1 Community facilities
2 Recreation area
3 School area
4 Cemetery
5 House reserve
6 Piggery
7 Pond
400 0 400 800 1200 1600 2000 Feet
TREMOLESWORTH
(land reform settlement)
N.E.W.

NAME OF SETTLEMENT	AGRICULTURAL ENTERPRISES	OBSERVATIONS
		tural Marketing Corporation has instituted an incentive scheme to encourage the production of other crops. The Settlement Officer has started a small demonstration vegetable plot with assistance from the Agricultural Extension Officer. This experiment however, has developed on the initiative of the Settlement Officer, not as part of the activities to encourage agricultural development. Supplemental employment is found on the sugar estates nearby.
Content II (Hanover)	Cattle rearing, food crops on hillsides.	Rolling landscape surrounded by low hills. Paved main road with unpaved roads and bridle paths in the interior of the settlement. Water supply from public and individual private tanks. Village area in the centre of the property. Farmers are mostly full-time; only 15% seek supplemental employment. Poultry co-operative established in 1961 failed, due to poor marketing arrangements. Settlers still have bitter feelings about this scheme. The cattle are raised for beef which is sold to local butchers, the Lucea Meat Packing plant, and to butchers from Kingston.

APPENDIX D

KAISER BAUXITE RESETTLEMENT

The Kaiser Bauxite Company started its exploration operations in Jamaica in 1947. The Land Purchasing Programme was begun in 1948, and to accommodate farmers dispossessed of their lands as a result of the Company's activities, the Resettlement programme was initiated in 1951. Each person received or was offered land equal in area to that which he sold to the Company. This practice has been continued, and has now been accelerated with the expansion of the Bauxite Company's operations.

Land offered to the farmer is located under either an Unspecified or Specified contract. Under the former the Company allots the land to the Vendor without consulting him as to his preference of location, whereas in the latter instance, the Vendor decides where he would like to have his allotment. A house is constructed on the new lot by the Company providing there was a bona fide dwelling on the land which was sold to the Company. In approximately 95% of the cases the Company applies for Registered Title on behalf of the Vendor. Titles usually come through after a one-year waiting period. The Vendor is put in possession of the resettlement land

only when the Title is finalized. Partial payment for the land purchased is made when the Vendor presents his Title to the Company, and the cost of the resettlement land is deducted when the Company makes final payment. Sometimes lease on old land may be granted at a peppercorn rental of 1/- per year until crops on new land begin to produce. Company purchased land not required for immediate use may be leased back to the previous owner for a period of 3 - 5 years; this lease is terminated after one year's notice.

NOTES ON THE PROPERTIES VISITED

CAVE VALLEY (ST. ANN).

Physical Features: Large glades due to the coalescence of several dolines. Land subject to flooding. Clayey soils. Good rainfall - annual average 64.11 inches.

General Observations: No houses on this settlement because of the danger of flooding. Area needs constant drainage to prevent soil from becoming water-logged. The small size of holdings (averaging 5 acres) precludes rotation of crops, therefore much fertilizer must be used to restore soil nutrients.

Crops: Cane and bananas interplanted with catch crops - cassava, cocoas and coffee. A few plots of yams, and some tobacco are also grown.

LILYFIELD (ST. ANN).

Physical Features: Landscape exhibits typical limestone features. Large areas of level land, but some very hilly, stony areas.

Several farms where rocks prevent continuous cultivation, and because of their large size would prove too expensive to move, therefore the crops are planted between the protruding rocks. Fertile soil in the pockets of land between the limestone hillocks. However, there are rapid soil changes within a relatively small area. Types of crops grown are related to this feature. Rainfall: Approx. 70 inches annually. 500 acres of the hilliest land in this area has been given to Government as a Forest Reserve.

General Observations: The area is well settled - all farmers reside on the property. The farmers (mostly full-time) seem quite successful, although there is a lean period from the end of July to November when activities on the farms slow down.

Crops: Vegetables e.g. cabbages, carrots and lettuce; Irish potatoes; corn; yams and peas; and a few bananas where soil conditions permit. Most of

the produce is sold in the Brown's Town and St. Ann's Bay markets, and some is marketed in Kingston.

WINDSOR (TRELAWNY) (Plate 22)

Physical Features: Karst landscape. Polje-like structures with accumulations of Terra Rossa soil, suitable for cultivation. The well-known Windsor Great Caves are located on this property and the Martha Brae River rises here.

General Observations: This property is cut-off from the other villages and towns in the Parish. No form of public transportation enters the settlement (see text). Few people reside on the property, and the township area is largely ruinate. The farmers who have been resettled here are from a highly agricultural area in St. Ann, and many of them are deterred by the lack of transportation. The area also suffers from a water problem, for although the Martha Brae runs

through the settlement no effort has yet been made to use it as a source of supply.

Crops: Sugar cane is virtually the only crop grown. Farmers have a contract with Trelawny Estates to supply a certain amount of cane to the factory, and are therefore reluctant to grow any other crop. Approximately 50 acres of bananas have been planted, and there is a small amount of pasture land for livestock.

NEW FOREST (TRELAWNY)

Physical Features: Limestone region, however no excessively hilly areas. Rolling landscape. Friable soils, unable to retain moisture. Dry area; heavy fertilization practised here.

General Observations: There is no water supply on this settlement to alleviate the dryness of the area. The people who live on the settlement work at other jobs besides farming.

Crops: Sugar cane grown under contract with Trelawny Estates Limited is the major crop. Some small patches of corn, and a few fruit trees e.g. grapefruit. Cane yields here are fairly high, comparable to that on the sugar estates - 35 - 40 tons per acre. Logwood trees growing on the property are indicative of the poor soil and dryness in some areas.

APPENDIX E

SOURCES OF INCOME ON FARMS, 1961

TABLE E-I FARMERS CLASSIFIED BY MAIN SOURCE OF AGRICULTURAL INCOME AND SIZE GROUPS * 1961

SIZE GROUPS	TOTAL NO. OF FARMS	FARMERS' MAIN SOURCE OF AGRICULTURAL INCOME		
		Livestock	Export crops	Other crops
0-<5 acres	113,239	4,020 (3.6)	58,906 (52.0)	50,313 (44.4)
5-<25 acres	40,769	2,624 (6.4)	25,088 (61.5)	13,057 (32.1)
25-<100 "	3,803	746 (19.6)	2,231 (58.7)	826 (21.7)
100-<500 "	779	231 (29.6)	481 (61.8)	67 (8.6)
Over 500 "	351	118 (33.6)	223 (63.5)	10 (2.9)
ALL FARMS	158,941	7,739 (4.9)	86,929 (54.7)	64,273 (40.4)

Source: Agricultural Census, 1961, Jamaica; Bulletin No. 3, Tables 10, 11, 17 and 18.

Note: Figures in parentheses are percentages of the total in each size group.

APPENDIX E

SOURCES OF INCOME ON FARMS, 1961

TABLE E-II FARMERS CLASSIFIED BY MAIN SOURCE OF CASH INCOME AND SIZE GROUP - 1961

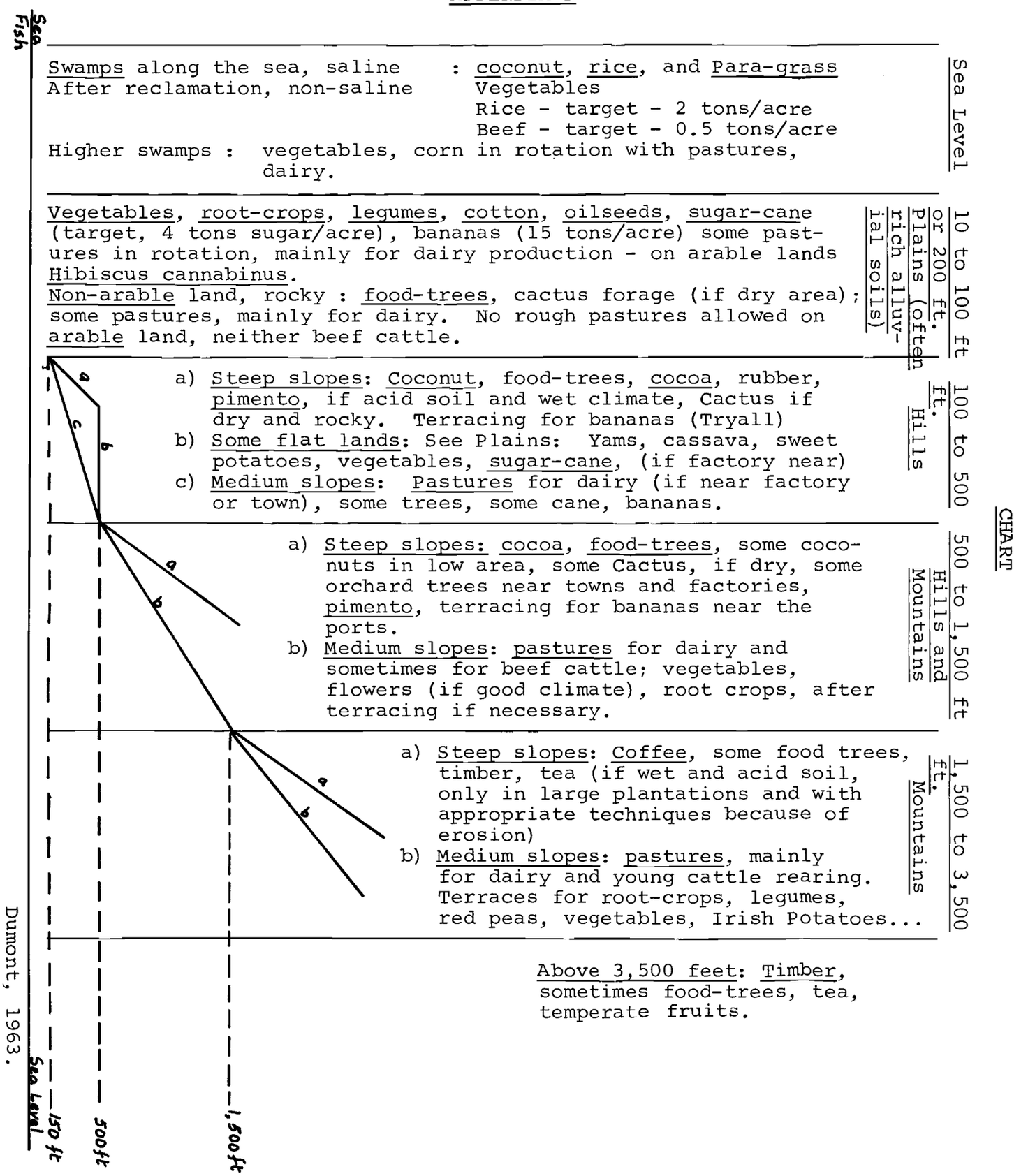
SIZE GROUPS	TOTAL NO. OF FARMS	FARMERS' MAIN SOURCE OF CASH INCOME			
		Own A/c	Agriculture	Non-agriculture	Pension
0-<5 acres	113,239	59,493 (52.5)	18,421 (16.3)	32,689 (28.9)	2,636 (2.3)
5-<25 acres	40,769	32,220 (79.0)	2,233 (5.5)	5,794 (14.2)	522 (1.3)
25-<100 "	3,803	2,998 (78.8)	137 (3.6)	599 (15.8)	69 (1.8)
100-<500 "	779	538 (69.0)	27 (3.5)	200 (25.7)	14 (1.8)
Over 500 "	351	286 (81.4)	8 (2.3)	56 (16.0)	1 (0.3)
ALL FARMS	158,941	95,531 (60.1)	20,830 (13.1)	39,338 (24.8)	3,242 (2.0)

Source: Agricultural Census, 1961, Jamaica; Bulletin No. 3, Tables 10, 11, 17 and 18.

Note: Figures in parentheses are percentages of the total in each size group.

APPENDIX F

CHART



Dumont, 1963.

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