THE HISTORICAL GEOGRAPHY OF ANTIGUA

by

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A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements for the degree of Master of Arts.

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April 1960

PREFACE

The purpose of this thesis is to describe the ever-changing relationship between man and the land on the Caribbean island of Antigua and to explain how human activities have been affected by the physical environment as well as factors of a social, economic or political nature.

Helpful suggestions and valuable criticisms have been given through the course of this work by Associate Professor T. L. Hills of McGill University and Professor Gordon C. Merrill of Carleton University. I am grateful also to a number of generous and hospitable people in Antigua, in particular the staff of the Agricultural Experimental Station at Friar's Mill and Mr. Owen Williams, Colonial Economic Adviser to the island. To these and to others too numerous to mention specifically may I extend my sincere thanks. Invaluable improvements in the text have been suggested by my wife Cynthia, who typed the thesis.

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Shirley Heights, Antigua.

I. INTRODUCTION

The small isolated island

The detailed study of a small tropical island provides a unique opportunity for the geographer to investigate and describe a concise area. He is within indisputable geographical limits, namely the shore line, which simplifies the problem of boundaries. Although the area of study may be thus conveniently defined, the geography itself may not. The climate is not unique over the island, but depends on the distribution and movement of very large air masses which inherit their characteristics from other regions. The natural vegetation, depending primarily on climate, has certain uniform characteristics within a much larger area, affected by such things as the carriage of seeds by ocean currents, birds and men. Changes of sea level in recent geologic time have resulted from glacial phenomena in the polar and sub-polar regions, and these changes have in turn radically affected the nature and distribution of wildlife in the islands. The very shape and composition of the islands cannot be regarded as an isolated thing but only as a part of the momentous and mysterious movements of the earth's crust.

And so the geography of the small isolated island soon assumes a more global background: physical phenomena

and human behaviour as well can only be successfully explained in terms of things and events beyond the boundaries of the island itself. This is soon realized, and the same is true of any geographical field work—that external factors must not be ignored.

Geographic determinism

In the settlement of an area the environment often has a strong effect. In the case of the Lesser Antilles this was primarily because the settlers were completely unfamiliar with the tropical environment, but also because of hostile Carib tribes, insufficient support from home, and the long distances to buying and selling areas. A region which thus erects a resistance to development succumbs to the invasion only if the pioneers muster a strong enough assembly of tools, techniques and determination, and if other external factors such as trade and politics are favourable. The difficulties which the early settlers encounter in new areas are relatively easy to assess; it is a case of man versus forest, or mountains, or Indians, or drought, and is often portrayed in this way in the journals and histories of those days. The settler senses the fact that he is at grips with nature, and that the success of the venture depends solely on his efforts.

However, once a fairly stable settlement is made, it becomes more and more difficult to trace the effect of

physical geography. Man has conquered the initial environmental resistances and has acquired a definite power over the landscape, an ability to alter it to suit his own ends. Certainly the factors of soil and climate continue to be important, but he understands them better in the light of his experience. Very quickly political and economic factors begin to assume greater importance, perhaps, than the physical. The physical factors still set a limit on human activities, but political, economic and other factors dictate whether such activities are done well or poorly. In frontier regions, therefore, a Robinson Crusoe arrangement exists between man and nature.

In considering the response of early settlers to the challenge of the physical environment the historical geographer must distinguish between events which were natural and direct results of the challenge and those which were brought about chiefly by the policy and directives of the mother country or colonizing body. Throughout West Indian history the latter have often been made in ignorance of local conditions.

The simplest example of geographical determinism is therefore to be found where the first settlers had complete independence and freedom of choice concerning their crafts, agriculture and way of life. When we study a Caribbean island which has been in succession part of a private grant, a segment of a crown colony, and finally a unit within the West Indies Federation, we may realize that a variety of

political, economic and social factors in Europe, America and the Caribbean itself have always been of great importance, and that these have probably influenced man's response to the natural landscape. Again the tidy and reassuring geographical limits of the small isolated island become less meaningful.

The Lesser Antilles

A casual viewer of the volcanic island arc extending some 700 miles from Puerto Rico south to Trinidad might notice that the various islands look much the same. This is no surprise, for they set astride a common submarine mountain range, and for the most part exhibit similar relief and scenery due to their volcanic origin, although several, such as Barbados, Barbuda and Anegada, display the flatness of coral islands. They are close together, all in the belt of the Northeast Trade Winds, and they share the uniformity of the Tropical East Coast climate. The vegetation grades from wet Trinidad to the drier islands in the north, but differences are not radical. Settlement by Europeans occurred in the seventeenth century, and was discouraged by the native occupants, the fierce Carib Indians. Development into sugar islands proceeded steadily after the introduction of African slave labour, and has been followed by a diversification of economy and a small degree of industrialization.

The islands therefore have many things in common.

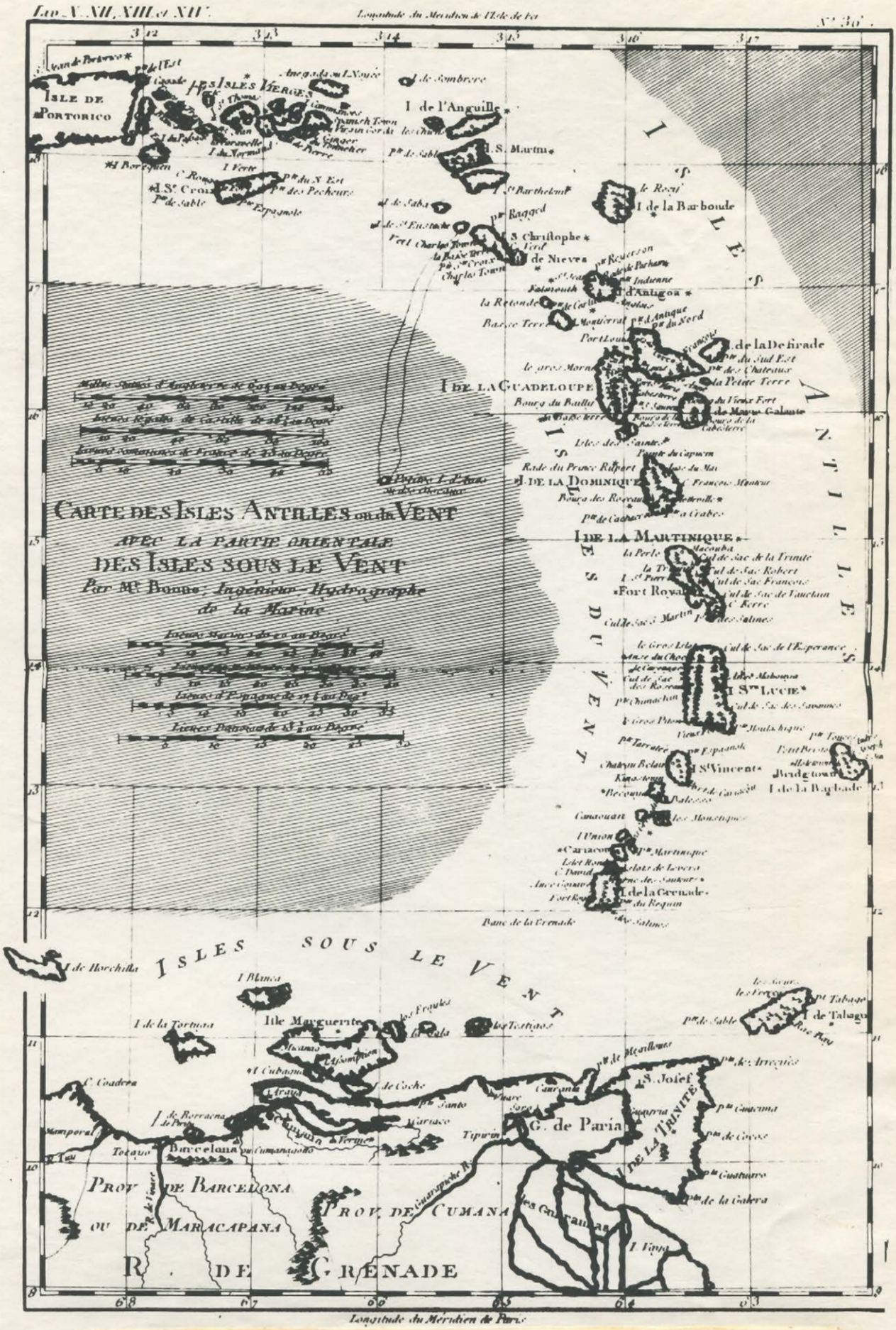

Fig. 1.--Bonne's map of the Lesser Antilles, 1780.

And yet their singular beauty lies in the fact that each has a special character of its own. They have been governed by several nations—England, France, the Netherlands, Denmark and, most recently, the United States, which purchased the Danish Virgin Islands in 1917. There are, in consequence, different institutions and approaches to colonial problems, different social attitudes and standards of living, different races, languages and mixtures of them.

Antigua

Antigua is a small island, only 108 square miles in area, lying on the seventeenth parallel of north latitude with a longitude of $61^{o}45'$ west. It is approximately round in shape, although the coast is liberally supplied with indentations. The southwestern third of the island is mountainous in character, with steep slopes, while the remainder is low and gently rolling. Virtually all the natural vegetation has been removed during the last few centuries by man, and most of the land is under cultivation, especially in the low regions, where sugar cane and cotton are extensively grown. The climate, however suitable for these crops, is characterized by an irregular rainfall, which has often reduced the agricultural production by drought conditions.

A small group under Edward Warner colonized Antigua in 1632 from St. Kitts, about fifty miles to the leeward. Sugar raising became popular in the second half of the

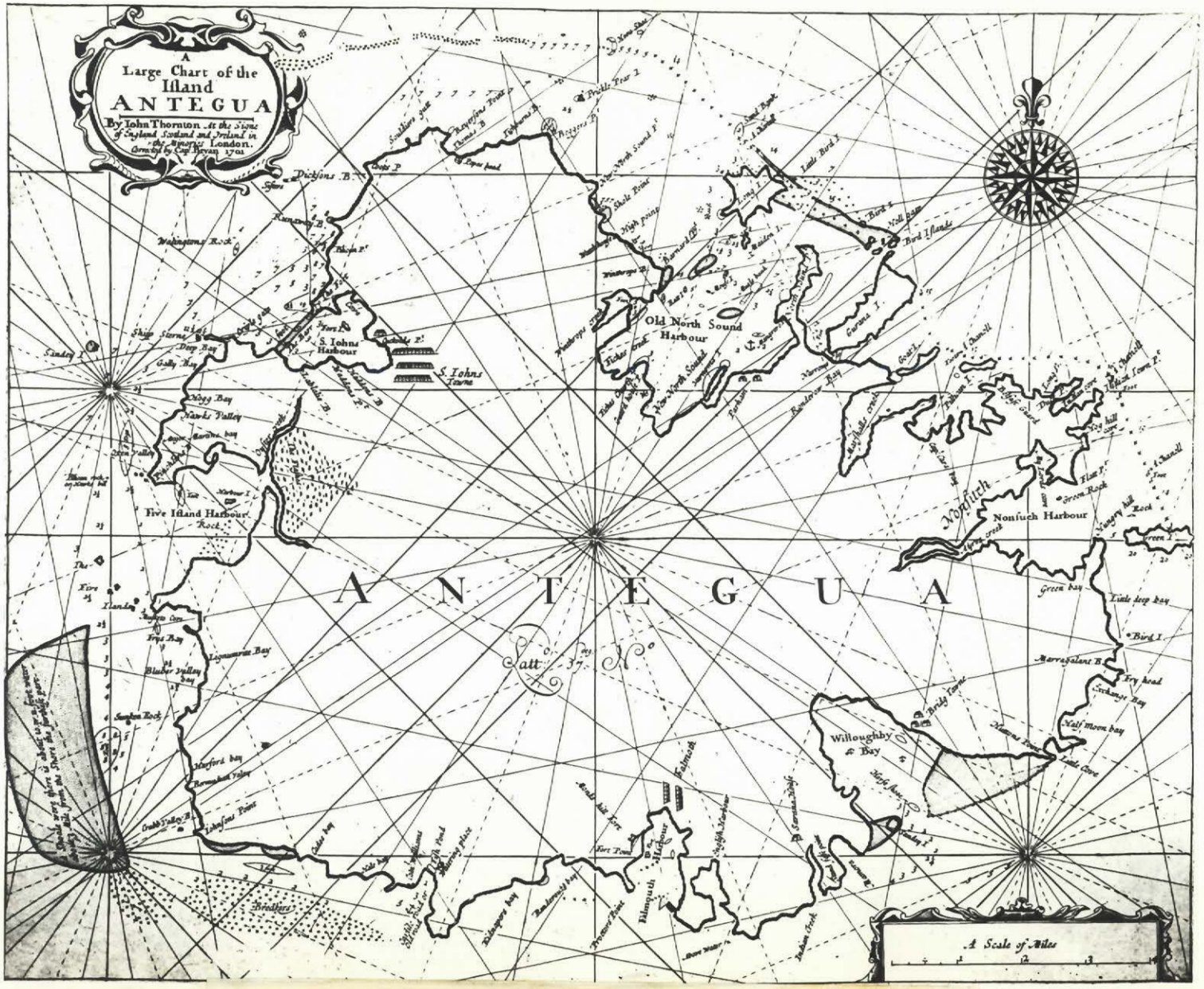

Fig. 2.--Thornton's chart of Antigua, 1701.

century and was accompanied by the introduction of African Negroes as a labour supply on the plantations. Slavery became an accepted part of the plantation system and continued until 1834, when abolition established the Negro population on a free labour basis. Today's population of over 50,000 is practically all black or coloured; less than 2 percent of the number is white. St. Johns, a port on the west coast, is the island capital and the seat of the government of the Leeward Islands. In 1958 Antigua entered the West Indies Federation.

Agriculture today occupies about half of the labour force on Antigua and of the commercial crops sugar cane is by far the most important in acreage and value. Sugar, cotton and molasses are the largest exports. Imports consist of grains, fish, meat, timber, nonedible oils, clothing, textiles, footwear and a variety of manufactured articles. The nature of the economy has changed little since the first days of sugar production in the seventeenth century: the island is still primarily a commercial producer of sugar for England and has never succeeded in overcoming its dependence on other areas for basic food items. Despite the recent encouragement of peasant settlement schemes, whose purpose is in part to increase local food production, Antigua grows little for its own consumption. It remains essentially a tropical plantation colony, despite its new political status within the West Indies Federation.

There are, however, indications that the emphasis

on sugar will be supplemented by the rise of small processing industries, the revitalization of the fishing industry, the improvement of the peasant agriculture and the expansion of the young tourist industry.

Antigua's position in the northeastern section of the Lesser Antillean chain has been important throughout its history. In the early days it was a common landfall for sailing ships coming from Europe or Africa, especially those destined for the northern sections of the Caribbean, and today it retains a strategic significance by virtue of its position relative to the Panama Canal; it is part of an outlying ring of defence sites, and the United States Navy maintains a missile base on the island.

Winds, currents and discovery

Winds and currents in the North Atlantic affected the course of discovery and settlement in the Caribbean area. From the coast of Africa to the shores of the New World the belt of Northeast Trade Winds provides steady favourable winds between the equatorial or doldrum belt of low pressure and the high pressure belt of the Horse Latitudes, which is at about 35° north latitude. Columbus sailed before the trades in his voyages of discovery, letting the remarkably steady breezes blow from astern to keep the squaresails full: it was natural that he should encounter the Bahamas or the Antilles. Not only does the prevailing wind direction tend to direct ships (square-rigged

in particular) to the West Indies, but the ocean currents as well. For the cold Canaries current descends along the coast of Africa from the region between Madeira and the English Channel until it curves to the right and joins the westward-moving North Equatorial Drift, a strong drift of water that parallels the equator in a direct path to the Caribbean Sea and the Gulf of Mexico. It is clear that any vessel departing from southern Spain would benefit from the clockwise circulation of water in the North Atlantic by keeping a course coincident with the Canaries Current and the North Equatorial Drift. A vessel departing during summer months, when the Horse Latitudes occupied their extreme northern position, might find the helpful Northeast Trade Winds virtually immediately and could make a direct downwind run to the Caribbean.

Because of the circulation of surface winds and ocean currents the Caribbean area was in a unique position to receive sea traffic from Europe during the era of the sailing ship. With the advent of coal and oil-burning vessels the physical geography of the north Atlantic ceased to influence the shipping routes to such an extent. Even today sail yachts making the westward Atlantic crossing almost always approximate the route of Columbus and come by way of the Canary Islands and the West Indies.[1]

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[1]So did Hannes Lindemann in his seventeen-foot foldboat in the autumn of 1956; he was seventy-two days between the Canary Islands and the Dutch island of St. Martin, where he landed.

Sailing route from Spain

In the island arc of the Lesser Antilles the central section was a distinct focal point for sailing ships from Europe. This was due to two reasons: firstly this area (from Antigua to Dominica) was roughly on the same latitude as the Cape Verde Islands, which were often used as a last stop for fresh food and water before the actual Atlantic crossing, and secondly a landfall could be easily made. The islands were small but mountainous, could be easily seen and identified, and were separated by convenient deep water gaps through which ships could run to avoid the crashing surf of the windward coasts. There was a reluctance to head directly for the Bahamas, for making a landfall on the windward side of low coral islands, barely visible and surrounded by shallow, reef-filled waters, was hazardous. Columbus did it on his first voyage, but arrived farther south on his succeeding visits.

Thus most of the sea traffic, whether or not its final destination was Cuba, Mexico, Panama or Venezuela, arrived first at one of the central islands of the Lesser Antilles. This fact is mentioned by the Carmelite missionary Fray Antonio Vásquez de Espinosa in the early seventeenth century. He describes the path of "galleons, fleets, and other ships which sail to the Indies of New Spain, the Spanish Main and other parts thereof" before colonization in the Lesser Antillean islands by other nations:

Fig. 3.--Bowen's map of the West Indies, 1752, showing prevailing winds and galleon sailing routes.

> . . . sailing W. they make the island of Deseada, and if they sail along 15°, the island of Marigalante, which will be over 750 leagues from the Canaries, and 1,000 from Spain; the galleons and fleets take on water at these Guadeloupe islands, and some fresh provisions of poultry, fish, and native fruit, which the heathen Indians of those islands bring them in exchange for axes, knives, and other articles.[1]

Spanish colonization in the Caribbean

History in the Caribbean area was dominated by Spain from 1492 until about 1623 when the English settled St. Kitts. During that century and a quarter the Spaniards were the only colonizing nation in the West Indies. Their rule was immortalized by their larceny of gigantic quantities of gold and silver from the Indians of Central and South America and by their annihilation of the native occupants of the Greater Antilles through disease, forced labour and execution. What is interesting is that they left the Lesser Antilles alone and pressed on rapidly from Puerto Rico and Hispaniola to Cuba, Central America, Venezuela and western South America. It was a lightning advance, accelerated primarily by the greed for wealth and secondly by a desire to colonize and convert. Its momentum carried Spain right through the Caribbean to the Pacific coast; the Lesser Antilles offered little in the way of wealth.

There was a gap to be filled in Caribbean

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[1]Antonio Vásquez de Espinosa, Compendium and Description of the West Indies, trans. Charles Upson Clark (Washington, D.C.: Smithsonian Institution, 1942), p. 1.

settlement, as a result of the rapid Spanish movement west, and that, of course, was the development of the Windward and Leeward Islands (Jamaica and the Guianas, too) as agricultural colonies by other nations. This process began in the seventeenth century, but it was preceded by two important phenomena.

Privateers

The first of these was a prolonged and incessant snapping at the heels of Spain by privateers and smugglers. In war and peace the effective harrassing of the trade routes, the pillaging of cities and the avoidance of customs tariffs continued as a decidedly sharp thorn in the fleshy side of Spain. This piracy began as early as 1536 and was serious enough to force Spain to adopt a rigid convoy system as early as 1542 when another war against France brought on hosts of privateering assaults in the Indies.[1] As a result of such operations Spain's military strength was stretched very thin, and it proved impossible to defend successfully both the shipping lanes and ports against the able and imaginative interlopers, whose ranks included such famous men as Jean Fleury, Francois LeClerc, Jacques Sores, John Hawkins and Francis Drake. The Spanish reluctantly abandoned their conception of a secure monopoly of trade

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[1]J. H. Parry and P. M. Sherlock, A Short History of the West Indies (London: Macmillan and Co., Ltd., 1956), pp. 29-30.

and colonization in the West Indies, which had begun with a bull called the Inter Caetera, dictated by Alexander VI, that boldly reserved all lands west of a line of longitude one hundred leagues west of the Azores for Spain. By the Treaty of London in 1604 James I announced that Spanish rights would not be recognized in unoccupied parts of America. Spain could do little against this.

The effect of the smuggling and privateering was therefore to weaken Spain and encourage other nations to colonize the unoccupied islands of the Lesser Antilles.

Slavery

The second phenomenon that preceded this colonization and which had far-reaching effects on the nature of these new colonies was the institution of slavery. In Hispaniola, scene of the first Spanish colonization, there was a large labour force of peaceful Arawak Indians, and there was no hesitation on the part of the Spaniards in exploiting these helpless Indians in a most inhuman manner. Under cruel conditions of forced labour in the gold mines this people was very quickly decimated, and by 1510, only eighteen years after the initial discovery of the New World by Columbus, a quantity of 250 African slaves was ordered from Spain.[1] The supply of slaves in Hispaniola had been exhausted, and it had already become economically necessary

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[1] Ibid., p. 17.

to bring others a distance of from two to three thousand miles.

By 1520 the African slave trade was thriving and the demand was still accelerating. As the produce of the mines declined, the cultivation of sugar cane increased, for this plant and the technique of its cultivation and use in sugar-making had been introduced by the Spanish before 1500. It was not long before the importance of slaves to the sugar plantations was realized, and as acreage increased in Hispaniola and Cuba so, naturally, did the demand for slaves.

This early beginning of slavery under Spain was very important, because it meant that by the time that the British, French and Dutch began setting up colonies in the Leeward Islands the supply of African slave labour to the Caribbean was already organized. It was relatively easy for the new settlements to drift into sugar cultivation using slave labour, for a precedent had already been set.

Lesser Antilles neglected by Spain

When Spain was sufficiently weakened by piracy and smuggling in the West Indies, the English, French and Dutch began to settle the small islands of the Lesser Antilles. This began about 1600, after more than a century of Spanish domination in the area, during which the Spanish had used the Windwards and Leewards for little more than watering places for incoming ships.

Why had the Spanish left the Lesser Antilles vacant? The answer is basically that Spanish eyes were set on Central America, on Mexico and Peru. Wealth was there, wealth in the form of precious metals that needed only to be carried down to ships and taken back to Spain. In Hispaniola they had had to mine it; in Mexico and Peru they merely stole it from the natives. The Spanish opinion of Caribbean islands, therefore, was that they were only stepping stones to the real goal--the continents.

Indeed such stepping stones were essential, firstly as sources of fresh water, fresh meat, fruits and vegetables for passing ships; secondly as military bases for expeditions against the mainland; thirdly as naval bases for the protection of outgoing treasure flotas; and finally as tropical colonies which could produce for Spain such products as sugar, rice, coffee, tobacco, hides and tallow.

Hispaniola and Cuba were the stepping stones for obvious reasons: their position was better suited to the purpose than that of the Lesser Antilles, and their large size gave larger agricultural production. We might add that their aboriginal population was large and easily exploited, because the Greater Antilles contained passive and peaceful Arawaks rather than the fierce, cannibalistic Caribs.

Consider the strategic position of the Greater Antilles in respect to Mexico: it is just under 1000 miles from Havana to Veracruz by sail, whereas from Antigua the

distance is more than 2300 miles. Because of location, Cuba could give more adequate military support to colonizing ventures and gold-seeking expeditions in the western Caribbean. In addition, it was helpful to have strong bases on the shipping route homeward, for provisioning of the ships and for protection in the vital, congested area of the Florida Straits. Gold ships from the Panama area would sail about 1200 miles northward to Havana, take on fresh food and water, assemble in escorted convoys and sail with the Gulf Stream up past Bermuda towards Spain.

Whereas bases in the Florida Straits region were essential to Spain, the Lesser Antilles could be easily ignored; they were too far from the coast of Central America to be of use.

The large dimensions of the Caribbean Sea are often overlooked. If a ship were to sail from the Cape Verde Islands to Mexico, it would travel about 2200 miles to cross the Atlantic to reach Antigua and almost 2400 additional miles across the Caribbean and Gulf of Mexico before arriving at Veracruz. The Lesser Antilles, therefore, are approximately halfway between Africa and Mexico, a fact which well illustrates why the Lesser Antilles were employed only as watering stops and not colonized by Spain.

Colonization in the Lesser Antilles

As the seventeenth century began, a number of attempts at colonization were made by the English and the

Dutch on the northeastern flank of the South American continent, the location of British, French and Dutch Guiana today. Among the English the pioneers included Charles Leigh (1604 on the Wiapoco River), Walter Raleigh (1617-18), Harcourt (1609-13) and Roger North (1619-21). None of these was permanent, whereas two Dutch settlements were. Parry says, "But the English failures had important indirect results, for they led to the first establishments in the Lesser Antilles."[1]

After two unsuccessful attempts were made to settle in the islands, first at St. Lucia in 1605 and then in Grenada in 1609 (both groups being either massacred or driven off by Carib Indians), a permanent colony was established on the island of St. Kitts (St. Christopher) in 1624 by Sir Thomas Warner.

The settlement of St. Kitts was important, not only because it established the first permanent English colony in the West Indies and set the pattern for many others to follow, but because it was from this island eight years later that Sir Thomas Warner's son Edward colonized Antigua, some sixty miles to the southeast.

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[1]Parry and Sherlock, p. 48.

II. THE PHYSICAL GEOGRAPHY

Geology

The geology of the Caribbean area as a whole has been described by Schuchert. Although his interesting study should be consulted by students of the Caribbean, its theories are only a background to a discussion of the local landscape of Antigua. Among those who have investigated the geology of Antigua itself are Nugent (1819), Purves (1884), Spencer (1901), Guppy (1911), Brown (1913), Tempany (1915), Vaughan (1915), Thompson (1921), Earle (1923), Davis (1926), Iddings (1926), Trechmann (1941) and Thomas (1942). A summary of geologic theories has been compiled by F. H. S. Warneford of Antigua, but is only in mimeographed form.

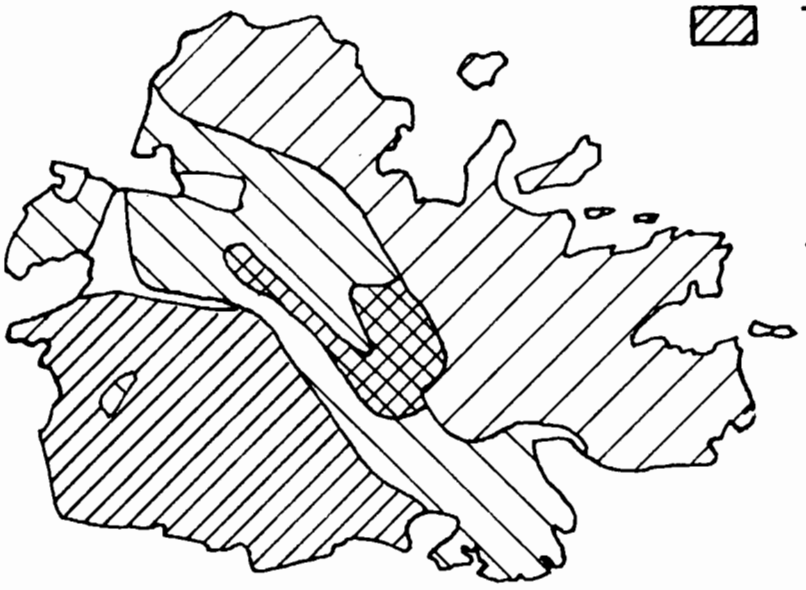
In the study of a region an attempt should be made to explain how the sub-surface arrangement of rocks is visibly reflected in the landscape, and how the landforms affect human occupance and land use. In Antigua the most important aspects of the geomorphology, as far as human activities are concerned, are the variations in elevation, the differences in soil character caused by a variety of parent materials, the character of the coastline and the presence of fringing reefs offshore.

It is obvious that the small, generally mountainous islands of the Lesser Antilles share some common geologic foundation, and from their appearance even a casual traveller

GEOLOGY

According to Dr. Nugent:
Included in Johnson, 1830

Marl
Conglomerate
Chert
Trap



Scale in Miles
0 1 2 3 4 5

Fig. 4

GEOLOGY

According to Martin-Kaye 1954

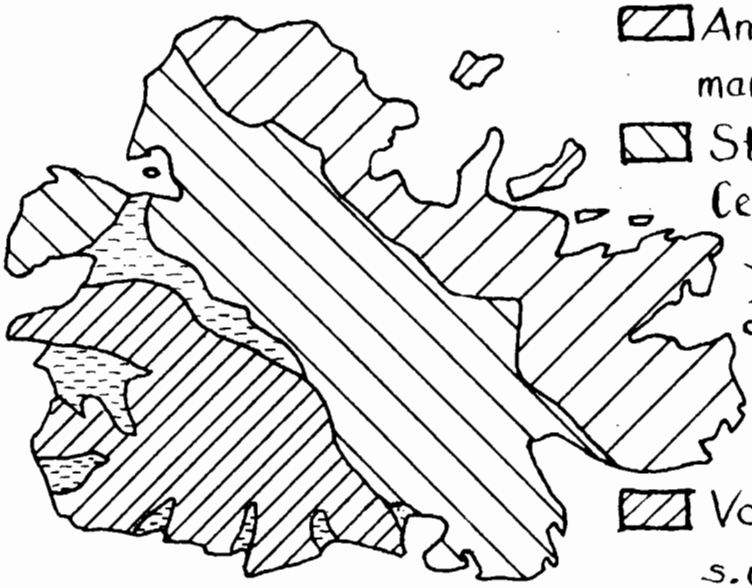
RECENT

Alluvium, valley fill & deltaic deposits.

UPPER OLIGOCENE

Antigua Formation: marls, limestones, clays.

Stratified series of Central Plain: Tuffs, sandy tuffs, marine & freshwater cherts, limestones.



Volcanic series of s.w. district: tuffs, agglomerates, breccias, etc.

Fig. 5

would guess that they were probably formed by the process of vulcanism. Their volcanic nature is indeed well known because of the number of earthquake shocks and eruptions which have been witnessed during the past 300 years; those of Martinique and St. Vincent in 1902 are particularly well known.

The islands are of volcanic formation, and they stand upon a north-south submarine ridge which separates the Atlantic Ocean from the Caribbean Sea. According to Schuchert, this ridge runs from the Anegada Passage, a fault trough over 7,000 feet deep, south to Grenada, thus excluding the Virgin Islands, which he considers part of the east-west alignment of the Greater Antilles, and the islands of Barbados, Tobago and Trinidad, which he deems structurally part of the South American continent. He divides this ridge, whose islands he calls the Caribees, into two distinct branches: (1) an older, northeastern, low-standing and inactive series of submerged volcanoes capped by Cenozoic limestones of different ages, which are often called the Limestone Caribbees; and (2) a much younger, western and southern series of high-standing and more or less active volcanic islands, the typical Caribbees, which make the island arc.[1] It is the first group to which Antigua belongs.

It is believed that Antigua (along with Sombrero,

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[1]Charles Schuchert, Historical Geology of the Antillean-Caribbean Region, (New York, 1935), p. 746.

Anguilla, St. Martin, St. Barts, Barbuda, Grandterre, Desirade and Marie Galante) was formed in late Cretaceous times, pushing up by repeated eruptions from a submarine ridge and finally emerging above the surface of the sea as an island. During the early Cenozoic era there was a continuation of volcanic activity which laid down upon the land, and in the surrounding water as well, a variety of ejected material, bedded alternately with layers of calcareous rock, indicating that the eruptions had occurred in well-separated spasms between which shallow water marine deposits were made. Subaerial erosion of the land surface provided the offshore area with much detritus.

During the Oligocene period the submarine bank upon which Antigua and the island of Barbuda now sit received water-distributed volcanic tuffs, sands and muds, as well as the strata of limestone which continued to be laid down during periods of volcanic inactivity. A steady subsidence of the island occurred. Forrest believes that at this time the northern part of the island (which is now quite low and flat, underlain by limestones) was submerged, while in the southern part (now steep and hilly) a few volcanic cones stood above water, erupting from time to time.[1] In the northern section siliceous vapours helped to mineralize fossils, and the famous fossil woods were preserved.

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[1]W. R. Forrest, Sketch of Physical History and Development of Antigua (Antigua: Govt. Printing Office, 1935), p. 4.

While subsidence continued in the middle and upper Oligocene, volcanic activity apparently did not, and the deposition was largely of shallow water calcareous organisms, including coral.

The most important phenomenon of the Miocene and Pliocene periods was the contortion and breaking of the body of the young island by crustal movements, in particular the uplift of a long narrow block, running from northwest to southeast across the island, bounded on both sides by parallel strike faults about two miles apart. In the form of a horst, this ridge has elevated the rock layers of low elevation to considerable heights: a chert layer visible at Corbison and Dry Hill, and also in Willoughby Bay just above sea level may be found on Constitution Hill at an altitude of 500 feet. The uplifted portion is at present irregular in form and low in elevation, having been reduced by erosion. It consists of a low rolling plain surmounted by a few outstanding hills, such as Belmont Hill (387 feet).

This uplifted block in the southwestern portion of Antigua increases in height towards the southeast, as illustrated by the following altitudes: Rat Island, 137 feet; Clare Hall, 155 feet; Scott's Hill, 300 feet; Lebanon, 350 feet; Constitution Hill, 515 feet; and Monk's Hill, 695 feet.[1] The uplifted block exposes large sections of the underlying rock, which ordinarily could not be examined

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[1] Ibid., p. 6.

except by borings. This prompted William Morris Davis to exclaim:

> Indeed, it [Antigua] reveals the deep under-structure of coral-reef lagoon deposits better than any of the 35 reef-encircled islands seen by me in the Pacific in 1914, for most of those islands had not been elevated, and those which had been elevated gave no such exhibition of their under-strunture as Antigua affords.[1]

Following the upheaval produced by faulting there was widespread intrusion along sills and dikes, producing metamorphism of the sedimentary rock layers, mainly in the southwest.

The Pleistocene period produced erosional effects along the coasts with a lowering of the sea level and also a rejuvenation of erosional processes on land. Offshore reefs were cut away as the sea level dropped, and formerly-submerged parts of the coastline were attacked by waves. Rivers, whose gradients had assumed something close to a mature adjustment, were lengthened in their courses far beyond their former mouths, with down-cutting becoming increasingly important as the base level of erosion was lowered about 150 feet. Valleys were extended greatly seaward. In St. Johns harbour a layer of peat was formed while the sea level was depressed.

With the final return of sea level to approximately its present level following deglaciation, the newly-modified

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[1]William Morris Davis, The Lesser Antilles (American Geographical Society; "Map of Hispanic America," publication no. 2, New York: American Geographical Society, 1926), p. 164.

river valleys were drowned. This entrance of the sea into the lower parts of Antigua's valleys produced the stongly-indented coastline which characterizes the island today. The rise in sea level also permitted regrowth of coral barrier reefs and resulted in the separation of Barbuda from Antigua. More recently there has been a bay head deposition by rivers and the creation of salty lagoon areas along the west coast.

There are several important ways in which the geologic history has come to influence the landscape and its use in Antigua:

1) The volcanic activity in the southwestern section of the island has deposited layers of ash, tuffs, agglomerates, breccias and grits; these beds have helped to build up the island and are often alternated with layers of coral limestone. It is the volcanic rocks of Antigua which provide the maximum relief in the southwest; other effects of vulcanism are the fossilization within the limestone strata, the metamorphism of sedimentary rocks by intrusions, and possibly the origin of gravel deposits.[1]

2) The greater part of the island is composed of limestone, which supports almost all of the commercial agriculture, with its gentle relief and moderately fertile soils. According to Davis, the Antigua formation of calcareous limestone is at least 1500 feet thick.

3) The Pleistocene period and its oscillating sea levels resulted in faster subaerial erosion on the land

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[1]Davis calls them "pebbles of lava," p. 150. Forrest indicates that they may be compound of marine organisms, p. 77.

mass, temporary destruction of barrier reefs due to a decrease in water temperstures and a lower sea level, and, finally, a drowning of lowered river valleys to produce an irregular coastline.

4) Since the post-glacial sea level rise, coral reef formation has again established barrier reefs around the island. They are still discontinuous, but nevertheless significant in their effect on navigation and their ability to protect the headlands from the full destructional work of pounding waves. The reefs thus hinder the sea in its attempt to make the irregular coastline straight.

Physiography

The volcanic district.--If a line be drawn on the map from Five Islands Bay directly to Willoughby Bay, it will enclose the mountainous southwestern section of Antigua.. In this area the highest elevation is found--that of Boggy Peak, standing a little over 1300 feet above sea level. Including Boggy Peak there are six distinct peaks which exceed 1000 feet in elevation. Martin-Kaye, Government Geologist for the Leeward Islands, has mentioned the possibility of an erosion surface: "At uncertain date the Antigua area may have been levelled by erosion; remnants of this level are perhaps to be seen in the general concordance of elevations at 1000 feet above sea level in the volcanic district."[1]

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[1]P.H.A. Martin-Kaye, The Water Resources of Antigua and Barbuda (La Penitence, B.G.: B.G. Lithograph Co. Ltd., 1956), p. 26.

Fig. 6.--Air photo of the volcanic district of the southwest, showing the narrow steep-sided valleys and the reef-fringed coastline with its lagoons, beaches, mangrove trees and cocoanut groves.

At any rate, the summits reach just over 1000 feet, and the slopes found in this volcanic area are steep. A profile drawn from the contoured map from Boggy Peak down to the floor of the valley directly south (which contains the village of Harveys) shows a slope of 30° from the summit to the 300 foot level, and the slope in a westerly direction to Orange Valley is slightly greater. And yet cultivated fields are found here. The volcanic hilly region is Antigua's problem area, because serious problems of soil erosion have arisen when over-steep slopes have been cleared and badly managed.

The severe relief of the volcanic region makes development difficult. Steep fields are hard to work and mechanization is out of the question. The delivery of products to market is labourious. Accessibility is therefore a major problem here, and this region remains the most isolated on the island, despite its greater precipitation due to altitude. A paved road encircles the hills, hugging the coast on its journey through Boland Village, Johnson Point Village, Carlisle and Sweets Village, and from this arterial highway several dirt roads run inward towards the high ground, mounting the valleys to the commencement of the steep slopes, after which winding paths ascend further.

The central plain.--Bordering the volcanic district on the northeast is a cross-island belt of much lower relief, not more than about fifty feet, on the average, but with occasional hills breaking its monotony. Such a hill is

Belmont's (386 feet), and the village of Buckleys stands on a rise more than 400 feet high.

The plain is essentially an uplifted area of sedimentary rocks from which the softer cap of limestones and marls have been eroded, leaving exposed the beds of cherts, tuffs, gravel deposits and some once-deep igneous foundations.

Aiding in the levelling of this central plain was the Bendals River, a subsequent river running along the foot of the volcanic hills from Body Ponds to Five Islands Harbour. Although this river is the longest on the island and largest in terms of volume, the importance of the central plain as a supplier of fresh water is reduced by the saline contamination of ground water. This is not due to seepage from the faroff coastal areas, but is a residual saline content within the rocks themselves. Martin-Kaye says, "Perhaps at the time of deposition the volcanic fragments fell at intervals on a region of shallow sea, salt swamps and natural salt ponds thereby incorporating layers of saline muds."[1] This theory lends support to Davis' theory of an atoll-surrounded lagoon during the deposition of the marine sediments in the early Cenozoic era.

The low elevation of the central plain, as well as the occurrence at its northwest extremity of St. Johns Harbour, a fairly well protected shelter for ships on the leeward side of the island, has led to large-scale development

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[1] Ibid., p. 50.

Fig. 7.--Air photo of the northern part of the island between St. Johns and North Sound. The boundary between the Gunthorpe and Otto soil suites above St. Johns is clearly marked by a change in land use and field size (compare figure 17). Hills remain forested (compare figure 22).

in both agriculture and commerce. Most of the land is cultivated, roads transect the region suitably and connect outlying villages with St. Johns, the capital; sugar cane railways are also spread through the area, and most of Antigua's population dwells here.

The limestone district.--The northeastern part of Antigua consists of thick deposits of limestones which were formed in shallow water within the protection of an encircling barrier reef.[1] This is the so-called Antigua formation of the early Oligocene era, at least 1500 feet thick. The beds are tilted uniformly down towards the northeast, with a dip of ten to fifteen degrees. From Wetherell Point in the northwest diagonally across the island to the north side of Willoughby Bay in the southeast an indistinct escarpment separates the limestone district from the central plain. Davis, in fact, mentions a series of "alternating cuestas and lowlands carved on the strong and weak belts of sedimentary strata,"[2] but the topography within the limestone area does not give a clear cuesta and vale appearance, being more simply a collection of small hills, a few hundred feet high with steep sides. These hills generally remain uncleared amidst the intensively cultivated flat land.

Hydrology

The high ground of the volcanic district sheds

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[1]This theory was put forward by Davis.
[2]Davis, p. 155.

surface runoff in all directions, a more or less radial arrangement of streams occupying the gullies which descend steeply to the valley floors. When water flows in the upper sections of these streams it really falls, tumbles, jumps and dashes, so steep and irregular are the gradients; it is not until the valley floors are reached that an orderly flow is seen. There are several valleys around the volcanic massif which collect the water of the various streams after rain falls and carry it in collected form to the sea. So mild are the usual lower courses of these valley streams that deposition often occurs before the sea is reached, and many of them empty into salt marshes or lagoons and continue to fill up their lower courses with silt. The large valleys which penetrate the volcanic range are as follows,[1] beginning in the north and moving clockwise:

1) Hamiltons

2) Clairmont (Carlisle Bay)

3) Harveys (Cade Bay)

4) Orange Valley

5) Christian Valley

Each of these valleys contains level, fertile agricultural land under cultivation and provides fresh water for irrigation or domestic use. The streams may be only seasonal, but the alluvial material of the valley floors provides good

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[1]Many have no name, and so the name of the nearest village or bay is therefore given. The location of the last four may be seen in figures 6 and 10.

conditions for storage of ground water, which can be reached easily by well. Martin-Kaye records in the volcanic district a total of thirty-six wells and springs (including drilled wells) and eight separate areas which he describes as "promising areas for drillhole water sources."[1] Each of the latter is in one of the valleys tangential to the high ground.

In the central plain the ground water is often spoiled by salt content and there are few wells, but the Bendals River carries a large proportion of the surface drainage from the southwestern mountains and supplies much of the water needed in St. Johns. The course of the Bendals River is roughly northwest, precisely along the boundary between the plain and the volcanic district. It begins in the reservoir of Body Ponds and discharges (after St. Johns's water supply has been subtracted) into the salt swamp called The Flashes at the head of Five Islands Harbour.

In the remaining part of the island the drainage is somewhat more regular. The gentle dip of the limestone beds down towards the sea in the northeast carries five small streams across to the windward coast: one to Nonsuch Bay, one to Belfast Bay, and three to the general area of Parham Harbour and its adjacent coves. One of these, Collins Stream, is second only to Bendals in the size of its drainage basin; it has from ten to twelve square miles, whereas Bendals has fourteen. Unfortunately, most of these streams

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[1]Martin-Kaye, map inside back cover.

have high contents of dissolved salts, due to their origin in the central plain area, whose aquifer layers contain remnants of ancient salt lagoons. Their use is therefore restricted to the watering of stock in most parts, with the notable exception of Carr's Gut, which rises and flows all within the limestone district. The resources of ground water have therefore been exploited by a number of wells and springs (Martin-Kaye's map gives a total of thirty-nine, which is slightly more than in the volcanic district). The subterranean resources seem large, but the well location is complicated by 1) seepage of salt water from the sea, 2) intercalations of beds of tuff or clay with salt content, and 3) scattered perched water tables. The limestone district, nevertheless, supplies enough water for its own needs, with the possible exception of the southeast section, where "St. Phillips's is a newly erected village with no noticeable supplies at all, this aspect having apparently been overlooked in the enthusiasm of planning."[1]

The surface drainage of Antigua may be thus summarized:

1) Several small streams flow radially outward from the high ground of the volcanic district.

2) The northern streams of the volcanic district are tributary to the Bendals River, which flows towards the northeast along the southwestern boundary of the central plain, emptying into Five Islands Harbour.

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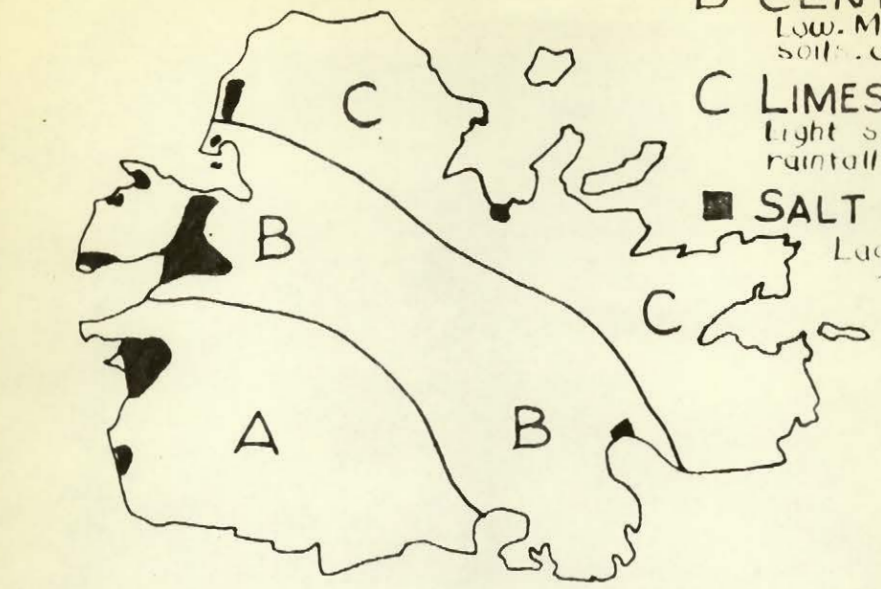
[1] Ibid., p. 46.

PHYSIOGRAPHIC REGIONS



A VOLCANIC DISTRICT
High and wet. Subsistence crops. grazing. Woodland.

B CENTRAL PLAIN
Low. Moderate rain. Clayey soils. Commercial sugar.

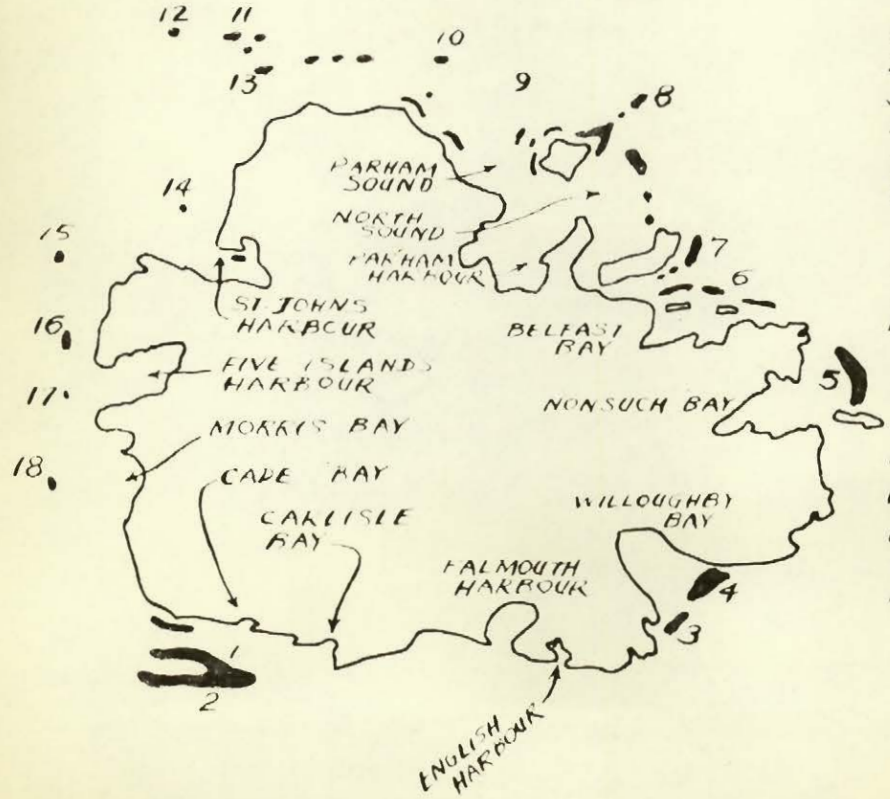
C LIMESTONE DISTRICT
Light sandy soils. Low rainfall. Peasants. Cotton.

SALT MARSH
Lagoons and marshes.

Scale in Miles
0 1 2 3 4 5

Fig. 8

BAYS AND BARRIER REEFS



PRINCIPAL REEFS AND BANKS

1 Middle Reef
2 Cade "
3 Marmora "
4 Horse Shoe "
5 Nonsuch Bay "
6 Belfast Bay "
7 Great Bird Island "
8 Bird Islet "
9 Kettle Bottom Shoal
10 Horse Shoe
11 Salt Fish Tail
12 Diamond Bank
13 Bannister "
14 Warrington "
15 Weymouth Reef
16 Hearst Shoals
17 Pelican "
18 Irish Bank

Fig. 9

3) In the low-lying remainder of the island the streams flow towards the various indentations of the north-east coast.

4) There are no navigable rivers; their chief use is in supplying drinking water for human and animal use, and in irrigation.

5) "All the streams of Antigua are flashy and carry flows varying between surging torrents after heavy rains and a mere trickle in dry weather. Many dry up altogether or merely show a few stagnant pools along their course."[1]

Coastline

A map (figure 9) shows the coastline to be much indented by bays, among which the largest are

1) St. Johns Harbour

2) Five Islands Harbour

3) Falmouth Harbour

4) Willoughby Bay

5) Nonsuch Bay

6) Belfast Bay

7) Parham Harbour and North Sound

Most of these are in the limestone district and the central plain; the hills of the volcanic district plunge so much more steeply into the sea that bays are little developed, whereas elsewhere the slight dip of the land has allowed the sea to penetrate much farther into old valleys.

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[1] Ibid., p. 30.

From the point of view of human occupance it seems unfortunate that some of the spacious bays of the northeast coast are not situated on the west or the south coast, because they have been little exploited for commerce and fishing due to their exposed locations on the windward side of the island. Although offshore fringing reefs subdue the Atlantic surf before it attacks the shoreline, the hazard of anchoring on a windward coast persists, and the land along this coast is flat enough to permit strong winds to pass undisturbed over sea and soil alike. The only indentation that has been used actively as a port is Parham Harbour, but it is a place of minor significance today. Another landing place has been created in North Sound for the use of the U. S. Navy; motor ships of shallow draught can unload at a wharf directly in front of the new U. S. missile site on the west side of the sound.

On any of the islands of the Lesser Antilles there is a world of difference for the fisherman or ship captain between the windward and leeward coasts. Barring the slight variations in wind direction produced diurnally by land and sea breezes or the occasional passage of a hurricane, the direction of the Northeast Trades is quite invariable, and the windward coast is always the east or northeast one. Exposed to steady trade winds blowing onshore and a heavy Atlantic swell crashing onto the beaches, these windward coasts offer little attraction to mariners. Of the ten largest islands of the Lesser Antilles not one has its capital or any

significant port on the exposed side.

The protection provided on leeward coasts has been an important factor in the settlement and economic life of the islands. In some cases excellent harbours are found on these coasts, such as St. George's, Grenada; Castries, St. Lucia; and Charlotte Amalie, St. Thomas. In other cases The leeward coasts contain no spacious and deep indentations, and yet the advantage of offshore winds and smooth water is enough; open roadsteads where freighters must anchor offshore and load from lighters are found at Basseterre, St. Kitts, and Kingston, St. Vincent. The west coasts, with or without deep bays, are everywhere preferable to the east coasts for the location of ports.

Antigua has three indentations on the west coast, and of these St. Johns is most suitable for a sizeable port. Morris Bay is too exposed and offers poor access to the agricultural hinterland, and Five Islands Harbour has a huge salt lagoon at its head. The agricultural land of the central plain is easily accessible from St. Johns, and its marine approaches are convenient, but the full utilization of this harbour is prevented by the occurrence of a mid-bay bar which effectively prevents any ship larger than a native trading schooner from reaching dock. Inside Fort James Point depths are less than three fathoms, and freighters are forced to anchor about a mile from the St. Johns waterfront.

St. Johns will be discussed in a later chapter, but the point to be made here, in a discussion of coastline, is

Fig. 10.--Air photo of the west coast south of St. Johns Harbour. Spurs of the high volcanic district reach the sea, forming headlands. Bays are alluvium filled. Salt marshes and lagoons are common. Because of shallowness and location these bays have not developed as harbours.

this: Antigua has some splendid harbours, but the best ones and the greater number are unfortunately on the windward coast and can be little used as ports, whereas it has been necessary to locate the island's capital and chief port on the leeward coast in a harbour of mediocre quality where large ships must anchor far offshore.

During Antigua's geologic history the formation of coral reefs has played a significant part. If the theory of Davis regarding the systematic development of fringing reefs, barrier reefs and finally an atoll on a subsiding island may be accepted, then the origin of the shallow water limestones and marls of Antigua, as he points out, may be diagnosed as the results of a deposition within a reef-encircled lagoon. We may agree, then, that during the subsidence of Oligocene time a barrier reef grew around the island and later produced an atoll when the island submerged. Later uptilting of the southwestern part of the island presumably brought about the destruction of the emergent part of the atoll by erosion.

Additional reefs were produced in the Miocene and Pliocene periods. Davis suggests that a second-cycle barrier reef occupied the rim of the Antigua-Barbuda bank.[1] This was presumably destroyed by wave action and low water temperatures during the considerable sea level drop of glacial times. Since the return of sea level to its present position, a re-establishment of coral reefs has been in process; thus

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[1]Davis, p. 161.

Fig. 11.--Air photo of the Falmouth area. An absence of offshore reefs permits wave attack on the rocky coast, which is indented and cliffed. English Harbour is the island's most sheltered anchorage; Nelson's Dockyard is visible within it.

the reefs which one sees off Antigua today are of recent growth.

The important aspect of the implied second-cycle barrier reef around the rim of the submarine bank is that it protected the shoreline from wave attack; even on the precipitous south coast there has been virtually no cliffing of headlands. Coral reefs therefore gave Antigua effective protection from destructional marine forces in Oligocene time (first-cycle reefs around a subsiding island), in Miocene and Pliocene eras (second-cycle barrier reefs around the submarine bank), and today (post-glacial regrowth of bank reefs).

The fringing reefs today are not continuous. An accompanying map (figure 9) shows their distribution. As an indication of the protection they give the windward coast, it is possible to stand on many beaches of the northeast coast and find little or no surf, only small waves lapping up gently upon the sand. However, if one visits Half Moon Bay in the eastern section of the island where no offshore reef occurs, the surf will be found to be high, and on either side of the bay is a prominently cliffed headland.

If the young bank reefs so effectively protect the coast, why are the windward coast bays not convenient as ports? The answer is that, firstly, although the ocean swell is diminished by the reefs the wind is not, and most skippers have a fear of anchoring on a windward coast where strong winds blow. Secondly, the reefs themselves may make

the bays inaccessible for all but the smallest and most adroitly handled sloops. Unless reef gaps are large enough and the seas and winds subdued by protecting islands, the windward coasts are unsuitable for ports.

Climate

Antigua falls within the climatic type known as Tropical East Coast,[1] the climate generally found on the east sides of continents slightly poleward of the Equatorial Rainforest zones. In South America the rainforest extends from the equator northwards through the left bank tributaries of the Amazon, the Orinoco system, and even as far as Trinidad and Grenada, occurring in the wettest parts of those islands. It deteriorates rapidly into the drier and slightly more variable climate of the Caribbean. Whereas the average annual rainfall in Trinidad is 70.5 inches,[2] that of Antigua is only 43.3 inches,[3] and the range of temperature between the coldest and warmest month increases from 2.9°F. in Port of Spain, Trinidad, to 4.4°F. in St. Johns, Antigua.[4]

The climate is often described as being uniform or even monotonous, and for people accustomed to the extremes of

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[1]According to the classification of Finch and Trewartha.

[2]G. G. Auchinleck, "Rain-seasons in the West Indies" (Antigua Sugar Association. Probably 1957), p. 6. (Mimeographed.)

[3]G. G. Auchinleck, The Rainfall of Antigua and Barbuda (St. Johns, Antigua: 1956), p. 14.

[4]U.S. Weather Bureau in cooperation with the Work Projects Administration, "Climate of the States: The West Indian Islands," Dept. of Agriculture Yearbook 1941 (Washington: U.S. Printing Office, 1941), p. 1222.

the mid-latitudes there is much truth in this. With an annual temperature range of only a few degrees there is little difference between summer and winter. Only subtle changes occur in the vegetation from one season to the next, and strangers notice and often dislike this absence of violent seasonal rhythm. The high daytime temperatures and long hours of near-vertical sunshine are characteristic too, and hotels are careful to seek locations either on the windward coast or on a high promontory, where guests may be suitably cooled by the Northeast Trade Winds.

The most important aspect of the climate is, of course, rainfall. It is wrong to assume that with uniform annual temperature and a steady trade wind blowing over a warm tropical sea all year that precipitation will be regular and plentiful on an island such as Antigua. The rainfall is, in fact, small in quantity and irregular in distribution.

The biggest factor in inducing the moist ocean air to rise sufficiently to reach its dew point is the relief of the land. This is ably demonstrated on some of the mountainous islands, such as Jamaica, where very large differences are recorded between stations at high and low elevations. Merrill mentions the same phenomenon in his study of St. Kitts: "Rainfall shows orographic control, and it is likely that amounts well in excess of 100 inches per annum occur in the mountain area of both St. Christopher and Nevis."[1] In

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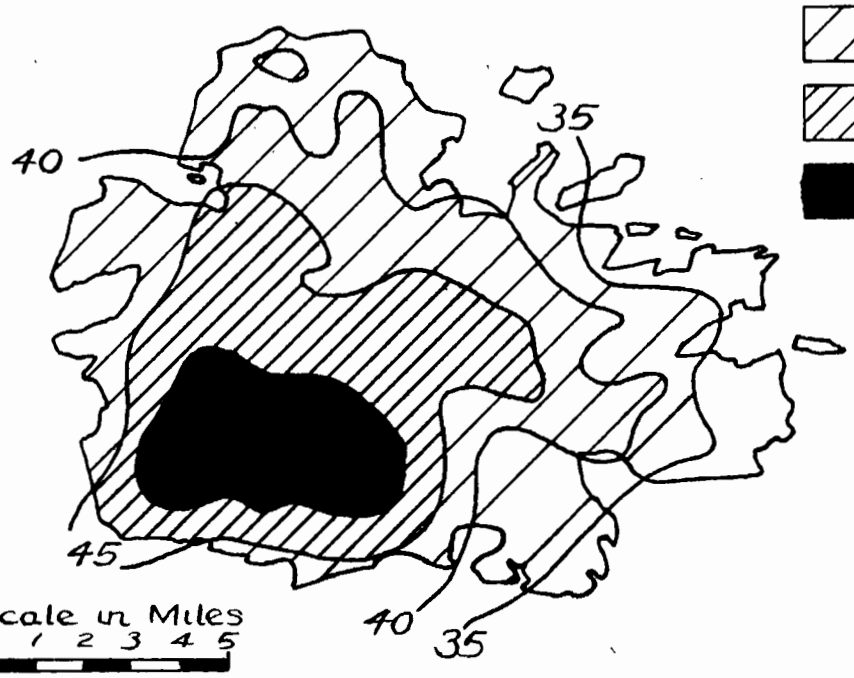
[1]Gordon C. Merrill, The Historical Geography of

ANNUAL RAINFALL

Auchinleck and Box 1937

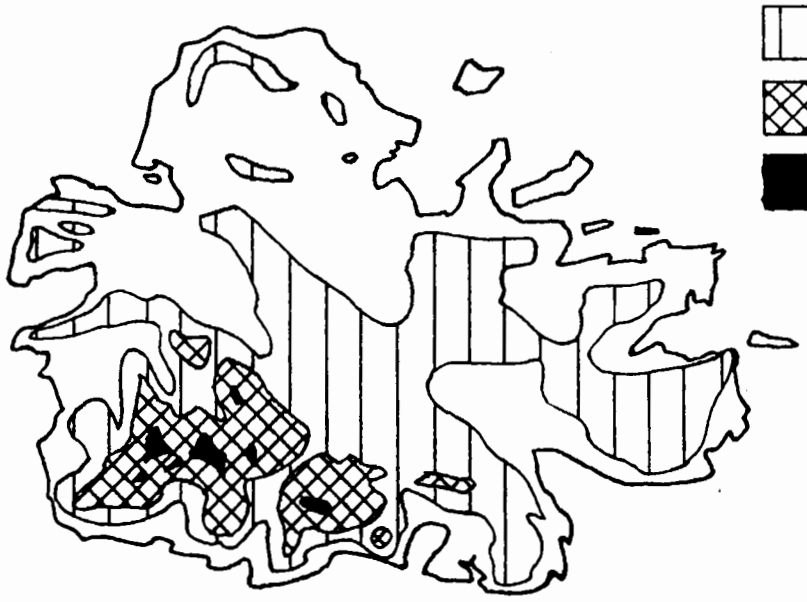


Under 35"
35 - 40"
40 - 45"
45 - 50"
Over 50"

Fig. 12

RELIEF

From topographic map 1949



ELEVATION
0 - 100 ft.
100 - 500 ft.
500 - 1000 ft.
Over 1000 ft.

Fig. 13

Antigua the relief is not great, and yet the rainfall map shows a direct relationship to the slope and height of the land, with over fifty inches falling throughout the volcanic district. This description is given by Auchinleck, a resident of Antigua:

> The system is governed by the hilly area of the southwest which rises to 1,000 feet or more. Prevailing winds come into the island from the East or Northeast and rise gradually from the coast to the tops of the hills, cooling as they rise and so depositing their moisture as rain. The slope of rise from the east coast to the hill-tops is a gentle one and so the rainfall is not great at any point along the rising line.[1]

Since the high ground of the southwest is only about 1000 feet above sea level the effect of cooling upon the rising air is not very pronounced. A lift of 1000 feet means a cooling of 5.5°F. (since the adiabatic lapse rate for rising air is 5.5°F./1000 feet), which is little compared to the cooling of about 40°F. experienced over the Blue Mountains of Jamaica.

However, it is significant that the rainfall map of Antigua is essentially the same as the relief map and important that the northeast limestone district receives under thirty-five inches a year on the average. This is not much, and with the excessive evaporation caused by high air temperatures the rainfall received over both the central plain and the limestone district is marginal in quantity.

The rainfall map, of course, is based on averages,

St. Kitts and Nevis (Mexico: Instituto Panamericano de Geografia e Historia, 1958), p. 27.

[1]Auchinleck, Rainfall of Antigua, p. 12.

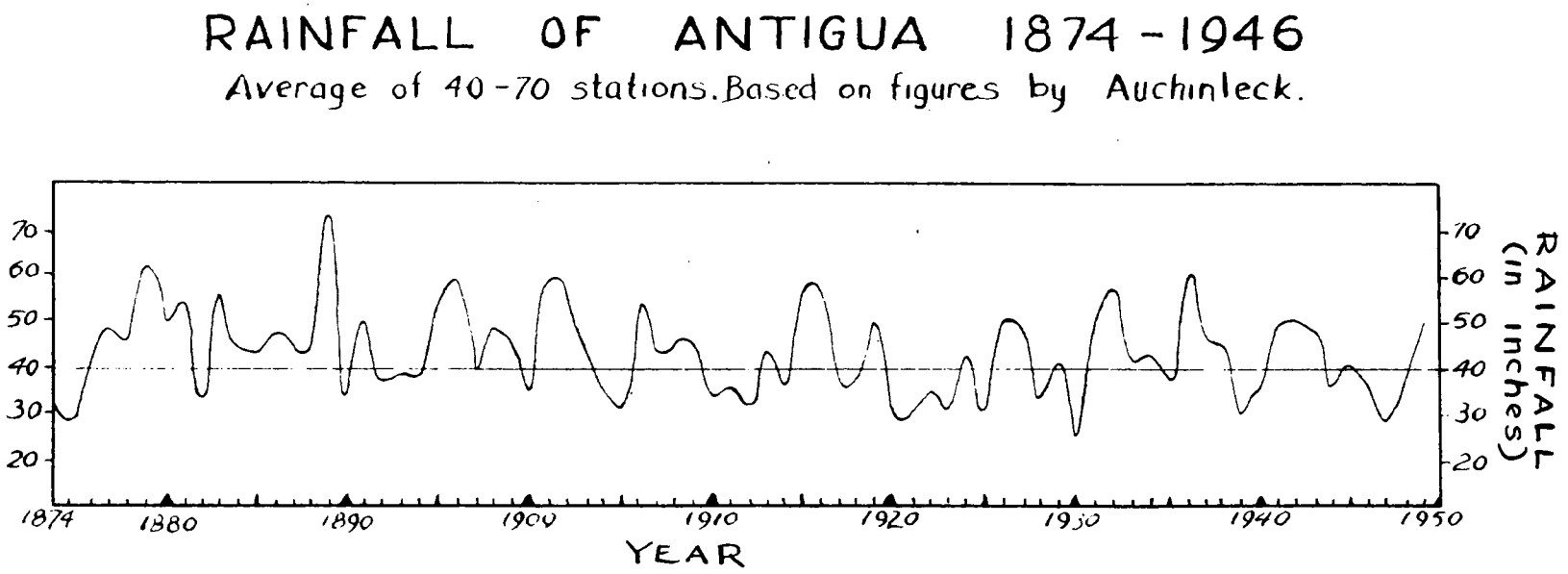

RAINFALL OF ANTIGUA 1874 - 1946
Average of 40 - 70 stations. Based on figures by Auchinleck.
70
60
50
40
30
20
1874
1880
1890
1900
1910
1920
1930
1940
1950
YEAR
RAINFALL (in inches)

Fig. 14

in this case averages of 74 stations over a period of from 20 to 48 years. (See figure 12.) However, averages give no indication of the variations which might occur from one year to the next, and for Antigua such variations are highly significant. If an annual rainfall of 40 inches, or even 35, could be expected each and every year, the problems that face agriculture would be vastly diminished, and yields would be constant; but, in fact, the rainfall of Antigua is extremely variable. The figures for average rainfall back as far as 1874, based on from 40 to 70 stations, show annual amounts of under 30 inches in 1875, 1930, 1939 and 1947, and amounts of over 58 inches in 1879, 1889, 1896, 1902, 1916, 1932 and 1936. The highest recorded is that of 1889, 73.59 inches, and the lowest, in 1930, was 25.51 inches.[1] (See figure 14.)

When such variations are experienced, bringing copious rains one year and burning drought the next, it is natural to wonder whether there is any way of predicting dry years. Is there a natural cycle, caused by some external factors, which governs the amount of rainfall? This question was discussed by Warneford in 1950, and his work is briefly summarized by Auchinleck.[2] From a study of the annual rainfall totals from 1874 to 1949 he reached the conclusion that very wet years and very dry years did not recur at any regular intervals.

In summary, the annual rainfall is low in quantity

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[1]Auchinleck, Rainfall of Antigua, p. 14.
[2]Ibid., p. 1.

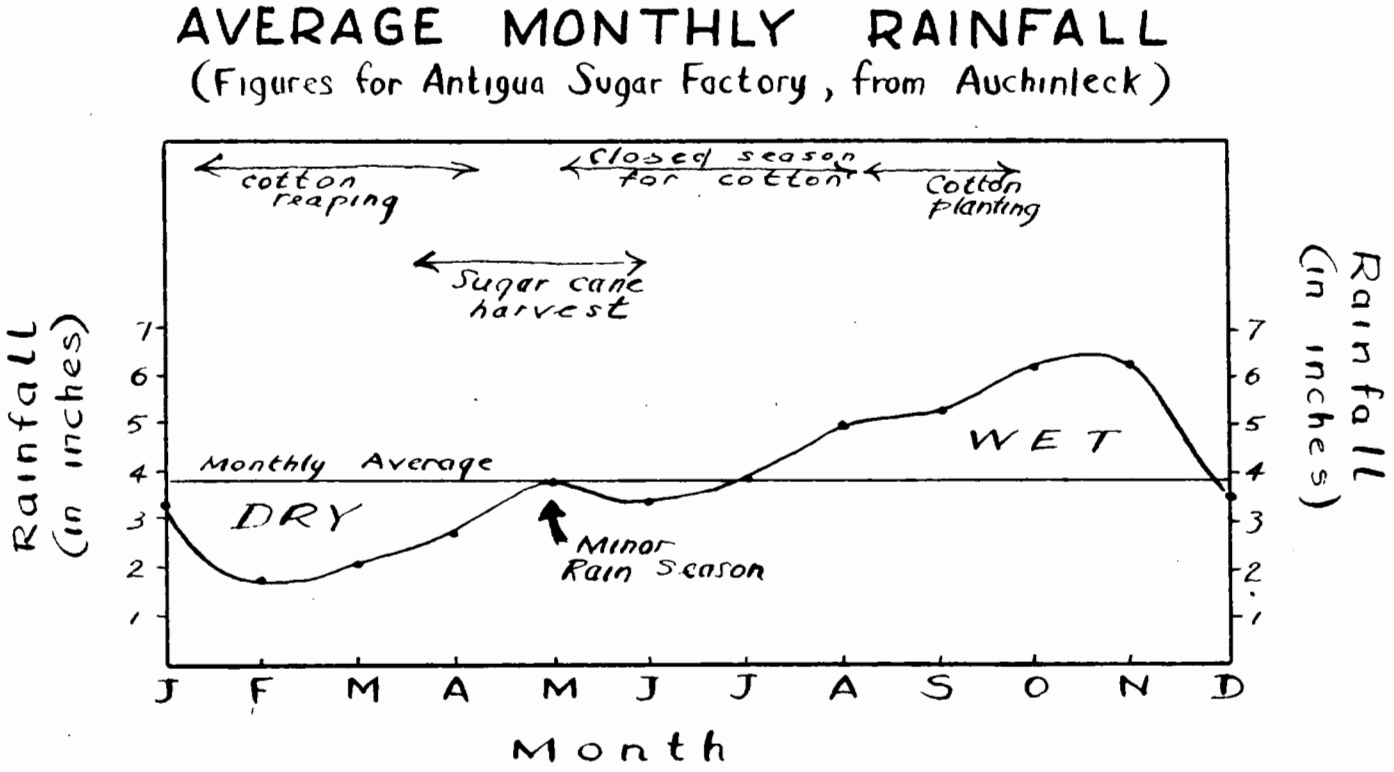
AVERAGE MONTHLY RAINFALL
(Figures for Antigua Sugar Factory, from Auchinleck)
cotton reaping
Closed season for cotton
Cotton planting
Sugar cane harvest
Rainfall (in inches)
Monthly Average
DRY
WET
Minor Rain Season
J F M A M J J A S O N D
Month

Fig. 15

over the agricultural lands (see figure 12) and tends to vary considerably from year to year (see figure 14). A few words are now required on the pattern of precipitation within the year. There is a rainy season from August to November inclusive, these four months producing very close to 50% of the annual total. This is a direct response to the increased heating of areas north of the equator in summer, although there is a time lag between the summer solstice and the maximum rains. In addition, there is a fairly heavy rainfall during the month of May, which results in about 9% of the annual total (see figure 15). The driest months are those from January to April inclusive, when the sun is south of the equator. Only from 18 to 20% of the annual total falls during those four winter months.

Vegetation

It is meaningless to talk of natural vegetation in an island such as Antigua where, at one time or another during the past three centuries, cultivation has invaded almost every acre and produced a total destruction of the original forest. The plantations, stimulated by high sugar prices in the eighteenth century, spread from the most level and accessible land onto the steeper slopes.

It is interesting to observe today the ruins of old windmills on exceedingly lofty and inaccessible positions in the volcanic district, a strikingly real illustration of the pressure of population on the land, and a good indication that

at some time in the past even a mountainous sugar estate was a worthwhile venture (see figure 26).

The boundary between field and forest has been a fairly reliable indicator of the demand for land. As long as Europe paid generously for cane sugar the Antiguan forests suffered, retreating to the most inaccessible parts of the volcanic district. If trees were not removed to make room for sugar cane, they were exploited in other ways, as fuel for the boiling houses, as a source of charcoal for Negro cooking pots, or for a variety of small carpentry jobs.

The volcanic district is fairly uniformly covered with dry scrub woodland,[1] except in valley bottoms and on lower sections of slopes, where fields are cultivated. This woodland is not an original forest; at one time or another all the hills were probably cleared. It is a secondary woodland whose character and appearance vary according to physical factors such as slope and aspect, and human factors such as the interference by man in the past. In the vicinity of Wallings Reservoir and in the valley descending to Carlisle Bay this woodland is more luxuriant than at any other location; it is here composed of a considerable variety of trees packed together closely. Beard estimates the age of this woodland as about thirty years.[2] At other places the forest is younger, the species smaller and more scattered,

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[1]The term is Beard's.

[2]J. S. Beard, The Natural Vegetations of the Windward and Leeward Islands (London, 1949), p. 158.

VEGETATION

According to Beard, 1949

Dry scrub woodland.

Dry scrub woodland, savanna and grazing land.

Cultivated land.

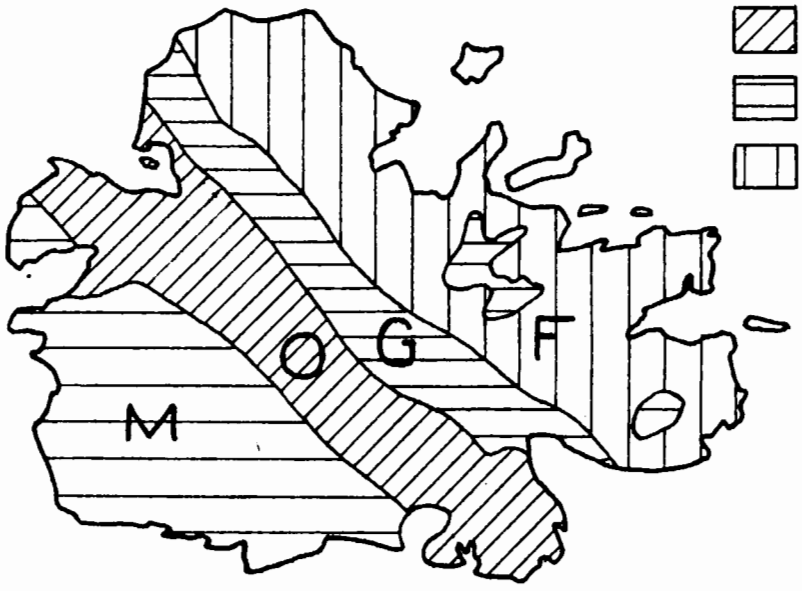
Scale in Miles

0 1 2 3 4 5

Fig. 16

SOILS

According to Charters, 1937



SUITES

Montero

Otto

Gunthorpe

Fitches

Fig. 17

with a predominance of low bushes and often cactus plants and agaves. A list of tree species noted by Beard in the volcanic district will be found in the Appendix.

The dry scrub woodland, which once occupied virtually all of Antigua, is also seen at scattered localities in the central plain and the limestone district. It remains in small areas which have been left uncleared either because of their unsuitability for cultivation or because of their usefulness in some other role, such as water catchment areas in the vicinity of ponds. The limestone hills of the northwest are capped by dense scrub and bush which are almost impossible to walk through because of the thick tangle of thorns and branches; there are few trees of any size. A more impressive growth exists around Body Ponds and along some of the water courses, where tall, large-crowned whitewood trees are common.

In the cultivated area there are a number of abandoned fields and old pastures which support coarse grasses, rough scrub and scattered thorn trees. Left alone, such fields become densely matted thickets of thorny bush, which is of no use to man. Often, when such pastures are cleared of the bush, scattered shade trees are left standing, giving the appearance of a genuine African savanna, but it is in fact a completely artificial landscape (see figure 20). The wide-crowned, flat-topped shade trees commonly seen are varieties of Acacia or Prosopsis--namely Acacia nilotica, Acacia lutea, Acacia farnesiana, Acacia tortuosa, and Prosopsis

Fig. 18.--Air photo of the St. Johns area. The shallowness of the harbour is evident; large ships must anchor the point of Fort St. James. The city is expanding towards the south. St. Johns is the hub of the road system.

chilensis. The latter, according to Beard, is the most common thorn tree in old pastures in Antigua.[1]

Coastal areas exhibit two distinct types of vegetative cover. Firstly, the low areas where shallow arms of the sea extend inland are invariably colonized by mangrove trees of three species--Rhizophora mangle, Avicenna nitida and Laguncularia racemosa. On deltas, mud flats and sand spits the mangroves spread out beyond the shoreline, often assisting nature in changing the morphology of the coast, eventually turning a sand spit or offshore bar into a lagoon, completely barricaded against the sea. Such lagoons frequently become valuable sources of salt.

Mangrove trees are small, growing with their roots in shallow salt water. Another common tree in such areas is the manchineel (Hippomane mancinella), which is considerably larger and often grows behind beaches and coastal swamps.

Secondly, there is a common association in exposed places near the sea of low bushes, some grasses and cacti, surmounted by the tall stately poles of the dagger plant, a species of Agave.

Approximately two-thirds of Antigua is under cultivation today, and the natural vegetation of the remaining part has been altered by man during the past. Cultivation is principally on the relatively level land of the central plain and the limestone district, while the volcanic district

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[1]Beard, p. 162.

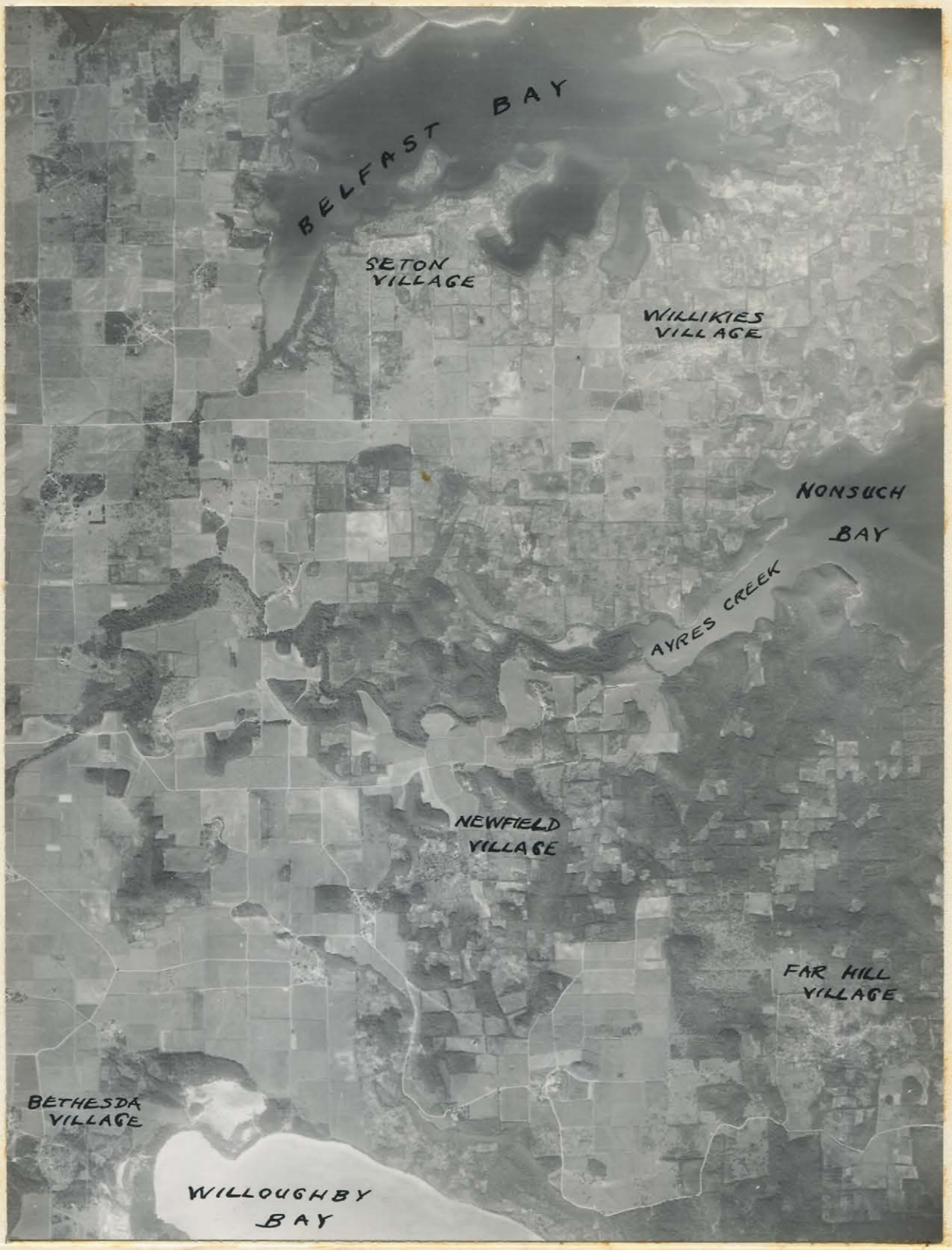

Fig. 19.--Air photo of the eastern regions from Belfast Bay to Willoughby Bay. North of Nonsuch Bay are the small holdings of the Rooms and Comfort Hall land settlements (see figure 39). To the south much of the land remains under woodland, while large sugar cane fields are dominant farther west.

remains under poor woodland and bush, some of which is used for pasture and even for some peasant agriculture. (The six air photographs--figures 6, 7, 10, 11, 18 and 19--will give an idea of the extent of vegetative cover in selected parts of the island, and figure 16 presents a generalized vegetation map of the whole island.)

Soils

In 1937 C. F. Charters published a soil survey of Antigua and Barbuda. This study remains as the only authoritative work on the soils of the island. (See figure 17 for the distribution of major soil groups.) Charters divides the soils into four suites, whose boundaries run parallel to each other diagonally across the island from northwest to southeast. The different soils clearly have some association with the physiographic and geologic divisions, and the author explains that each suite is in fact based on uniformity of parent material. Within these groups he makes finer subdivisions into soil series, after examining profile, structure and drainage relationships. The four suites are

1) Montero

2) Otto

3) Gunthorpe

4) Fitches

The Montero suite--The Montero suite occupies the volcanic district, underlain in some parts (in the Montero and Fry series) by volcanic material and in others by gravels,

sands and clays which have been derived from igneous rock or stratified tuffs (the Blubber Valley, York and Bendal series). The first two series include most of the hilly area of steep slopes, which is only partially cultivated due to the danger of rapid and destructive runoff after rains, as well as to its inaccessibility. Nevertheless, there are scattered peasant plots in the Montero and Fry soil series which raise cassava, arrowroot, yams, eddoes, sweet potatoes, pigeon peas, bananas, plantains and sugar cane. Fruit and nut trees include mangoes, limes, avocados and cashews.

The latter three series are more extensively farmed, either by estates or peasants or both. They occupy the low coastal plain surrounding the volcanic range, the alluvial soil of valleys extending from the high ground and the depression of the Bendals River on the north side.

The Otto suite--Roughly coincident with the south-western part of the central plain, the Otto suite extends from St. Johns Harbour to Falmouth Harbour and Willoughby Bay. In general, its soils are thin and mediocre in quality, suffering from poor drainage. They are underlain by impervious clays of recent deposition or by stratified tuffs. Chert boulders are often found in surface layers. Estate agriculture does not utilize these soils as much as it does those of the Gunthorpe and Fitches suites, but peasant agriculture is widespread. Much of the land supports poor scrub woodland, particularly in the southeast. There are wide variations in local conditions, both on and below the surface,

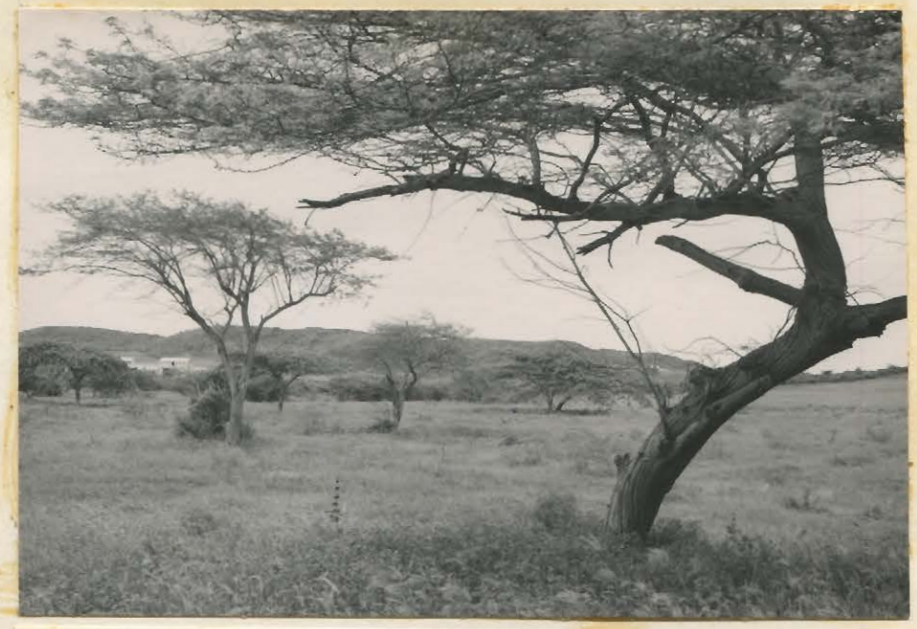

Fig. 20.--Thorn bush pasture. This type of landscape, in which scattered shade trees have been left to grow, is common in a belt surrounding St. Johns (see figure 18).

Fig. 21.--Flooding on the heavy soils. A few hours of very heavy rainfall in early June, 1958, produced immediate flooding on the clayey soils of the lowlands. The photo was taken about two miles north of St. Johns.

and nine soil series are designated within the suite.

The Gunthorpe suite--Soils of this group border the limestone district and occur also within its boundaries in patches. As the limestone escarpment is approached across the central plain the soils become increasingly alkaline, due to wash from the higher marl-covered area. The region is low in elevation, and natural drainage is poor. This is made worse by the clayey nature of the soil and subsoil, which obstructs seepage into basal ground layers and results in destructive surface runoff at times (see figure 21). The Gunthorpe suite, despite its drainage difficulties, is nevertheless extensively devoted to sugar growing.

The Fitches suite--The seven series, or types, within this suite are underlain by marls, which are much more permeable than the clays and tuffs of more southerly parts of the island. The soils are therefore less prone to waterlogging in rainy periods. This advantage is offset by the presence of "gall patches," which are calcareous areas too limey to support the growth of sugar cane, and occasional localities where outcrops of underlying limestones and debris of coral fragments may be common. Soil erosion has left gall patches exposed on certain small hills, one of the principal reasons why many knolls are still covered by bush and are not cultivated.

Sugar cane is common on the Fitches suite, but another significant crop is cotton, which is popular in the northwestern corner of the island on soils of the Wetherell

series. Pasture land in various states of development is frequently seen as well.

Charter emphasizes the importance of drainage in the development of Antigua soils. Underlying layers are frequently impervious--either heavy clays, non-jointed marls or volcanic rocks. This encourages dessication of surface layers in spells of dry weather and waterlogging in wet periods. The estate cultivators of sugar have found that with suitable attention the drainage difficulties can be surmounted, and that sugar can be profitably raised. Charter says:

> Since the majority of Antiguan soils consist of highly siliceous, intractable clays suffering from seasonal water logging, they require elaborate and expensive methods of tillage and well-organised drainage systems if they are to be worked to the best advantage. They are, therefore, little suited to small-scale peasant development.[1]

This last sentence must be very carefully noted in view of the strong conflict between proponents of a greater extension of small peasant-owned plots and those who support the idea of a large, centrally-operated, integrated sugar industry.

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[1]Charter, C. F., Soil Survey (Reconnaissance) of Antigua and Barbuda (London: Crown Agents, 1937), pp. 29-30.

Fig. 22.--Aerial view from the north. The photograph was taken from an aircraft over North Sound. The limestone district and central plain stretch away towards the mountains of the volcanic district.

III. SETTLEMENT AND EARLY DEVELOPMENT

The sixteenth century

In the century following the discovery of the West Indies by Columbus the Spanish pressed on with great haste to Central and South America, reaching Peru by 1530. As we have seen, the small islands of the Lesser Antilles held forth very little attraction to them. Spain was biting off more than she could successfully chew anyway, with conquests and colonization extending from Mexico to Chile. At this time her prime economic function was the extraction of gold and silver from these countries and the shipment of the enormous wealth home to Spain; agriculture and settlement were both means to this end. Clearly the Lesser Antillean islands could be of little use in the protection of the treasure fleets, whose homeward path took them out of the Caribbean through the Straits of Florida and northeastward with the Gulf Stream and westerly winds.

The Florida channel was the focal point in Caribbean trade, and it was the role of Havana to collect outgoing fleets into well-escorted convoys and to provision them before their departure for Spain. The naval forces based at Havana were expected to adopt offensive measures against the foreign interlopers who were beginning to intrude boldly into Spanish waters.

For the foreign interlopers who were beginning to insert a wedge into the Spanish trade monopoly in the Caribbean the Florida channel also offered attractions. Human cargoes of African slaves could be sold at outlying Spanish settlements on Hispaniola or Cuba and return cargoes could be acquired. Also, for the more aggressive, there were ports to be raided and Spanish ships to be captured. The French even attempted to found a permanent settlement on the Florida coast,[1] a strategic position from which the Spanish shipping route could be effectively harassed. These activities attracted foreign corsairs to the center of Spanish power, the Greater Antilles. They were not drawn to the Lesser Antillean islands at all.

Buccaneers in the seventeenth century

It was an ominous day for Spain when the smugglers and pirates of France, England, and Holland began establishing bases of their own in the Caribbean area. This important step, which led to much more daring and effective operations against Spanish towns and ships and to a great increase in the numbers of the pirates--or buccaneers, as they came to be called--occurred in the early seventeenth century. Esquemeling, who sailed with the buccaneers himself, reports that the famous pirate stronghold at Tortuga (off Haiti's northwest corner) was settled by French who came from

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[1]St. Augustine in 1564.

St. Kitts soon after their arrival there is 1625.[1]

The first buccaneer bases in the Greater Antilles were thus contemporaneous with the first British and French settlement in the Lesser Antilles. There was, in fact, a connection between the agricultural settlements in the Lesser Antilles and the pirate bases farther west: malcontents from the Leeward and Windward Islands often left to reinforce the ranks of the buccaneers. This constituted a drain on the supply of white labourers in the islands and contributed to the failure of the indenture system of labour.

It is necessary to mention the buccaneers, because their imaginative and effective operations during the entire seventeenth century kept the defenders of the Spanish realm continually harassed in the western part of the Caribbean. This had the fortunate effect of leaving the Lesser Antilles free to receive agricultural settlement without much interference from Spain.

Settlement in the Lesser Antilles

The first successful colonization attempt in these islands was that of St. Kitts in 1623 by Thomas Warner, an Englishman. This had been preceded by unsuccessful attempts along the Guiana coast in 1604-06 (Leigh), 1609-13 (Harcourt), 1617-18 (Raleigh) and 1619-21 (North). Whereas the Dutch

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[1]John Esquemeling, The Buccaneers of America (reprint of 1st Eng. ed., 1684; London: George Allen & Unwin, Ltd., 1951), p. 9.

had succeeded in establishing two permanent colonies on this coast in 1616 and 1624, the British had not; they had failed to find the key to South America. Two other rather weak British efforts had been made farther north, one in St. Lucia in 1605 and the second on Grenada in 1609, but both had failed. It was eighteen years before a permanent colony was successfully planted in the Iesser Antilles, at St. Kitts.

Warner's success on St. Kitts encouraged other settlement schemes, and the islands of Barbados, St. Croix and St. Thomas, Nevis, Antigua, Montserrat and St. Lucia were colonized in quick succession, all before 1640.

Settlement of Antigua

Antigua was named by Columbus on his second voyage. He had made his landfall at Guadeloupe and was then sailing up towards the Virgin Islands and Puerto Rico. It is easy to imagine him on the quarterdeck, taking bearings on the islands, recording their positions and trying to devise a suitable name for each.

There has been much confusion regarding this voyage through the Lesser Antilles, especially in relation to the names which Columbus bestowed on the islands. Some clear thinking on the subject has been done by S.E. Morison, who not only examined the literature but re-sailed most of the routes followed by Columbus, beginning in 1937 with some cruising in the Windward and Leeward Islands and culminating in the trans-Atlantic trip of the Harvard Columbus Expedition

in 1939, a voyage under sail in two vessels apporximately along the path of Columbus' third voyage. More investigations were made in 1940, following the route of Columbus from the San Salvador landfall of his initial voyage to Cuba.

Morison concludes that Columbus sighted and named Antigua on November 11, 1493, but did not land on it or even approach it closely. The source of the name is evidently "the famous old painting of the Virgin in Seville Cathedral, which in Columbus' day was attributed to St. Luke. The Admiral had often prayed before Santa Maria la Antigua."[1] He thus convincingly contradicts Oliver, who stated that the name was derived from a church in Seville called Santa Maria de la Antigua. Morison looked in vain for such a church in Seville.

There is one record of a visitor to Antigua before 1628, and it is probable that passing ships of Spain or other nations occasionally stopped for fresh water and fruit after Atlantic crossings, for, as we have seen, Antigua lay in the principal sailing route from Europe to the Greater Antilles or Mexico. And it is again probable that the island may have received frequent visits from both the French and English settlers on St. Kitts between 1624 and 1628; it was only about fifty miles distant. The reference to an early visit is from Antigua and the Antiguans, a social history

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[1]S.E. Morison, The Second Voyage of Christopher Columbus (Oxford, 1929), p. 59.

accredited to a Mrs. Lanaghan (or Flannigan) in 1844. She gives no source, but states that in 1520 a Spaniard named Don Antonio Serrano, who had royal licence to settle the Leeward Islands, landed on Antigua, drove off some Carib Indians and began the establishment of a permanent settlement.[1] For some unexplained reason the colony did not prosper and the settlers left. She also mentions that at the time of Columbus' visit to the island there were no Carib Indians residing there permanently because of "the want of water, which caused European settlers so long to neglect the island, deterring them also from establishing themselves upon it."[2] The statements of Mrs. Lanaghan are interesting for two reasons. Firstly, she describes an early, unsuccessful attempt at settlement. This is of particular interest because the colonizing power was Spain, which in general had little interest in the Lesser Antilles. Secondly, she mentions the lack of water on Antigua as being a strong deterrent to settlement by either Europeans or Caribs. However, Mrs. Lanaghan's book contains obvious errors, such as the statement that Columbus actually visited the island and saw Caribs there, and so we must view her remarks with caution. The origin of the Serrano story is doubtful, but Paton repeats it in his book on West

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[1]Mrs. Lanaghan (Flannigan?), Antigua and the Antiguans (London, 1844), I, 12ff.

[2]Ibid., p. 12.

Indian travels in 1837.[1]

Anthony Hilton established a small colony on the windward side of St. Kitts in about 1627, with Thomas Warner's permission. This group was partially annihilated by Caribs, and he prudently moved to the west coast, which was better protected. With the backing of a merchant by the name of Littleton he then resolved to settle Nevis, only a few miles south of St. Kitts. A commission from the Earl of Carlisle gave him permission to settle any uninhabited island, including Barbados, and the colonists, on their way out from England, had a look at several islands:

> And in theire voyage from ye Downes they landed att ye Barbados which they did not like, nor of Antegoa nor Mount Serratt. They came downe to Nevis ye 22th of July 1628, which Island they thought fittest for theire Settlement being next Christophers, from whence they might be better supplied.[2]

In 1629 the young colonies of France and England on St. Kitts were surprised by a Spanish fleet of thirty-four vessels commanded by Don Frederick de Toledo. Although the ships were en route to Brazil to attack the Dutch, they saw fit to strike down the thriving settlements on St. Kitts en passant. This they most effectively did, accepting a surrender of the inhabitants and burning the plantation fields and buildings. They then gave the people the choice of being

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[1]W.A. Paton, Down the Islands; A Voyage to the Caribees (New York, 1888), p. 74.

[2]V.T. Harlow (ed.), Colonising Expeditions to the West Indies and Guiana, 1623--1667 (printed for the Hakluyt Society; London: Bedford Press, 1925), p. 6, from the "Relation of the First Settlement of St. Christophers and Nevis, by John Hilton, Storekeeper and Chief Gunner of Nevis."

shipped back to Europe or fighting for Spain. It seems that some were deported, some fled to other islands by boat and some took temporary refuge in the hills.

It is said by Oliver that in the flight from St. Kitts some of the Frenchmen took a look at Antigua with an eye to settling there. In his words, "D'Enambuc [d'Esnambuc, the governor of French St. Kitts] fell in with captain Giron, one of M: de Cusac's squadron at Antigua, with whom he examined that island, but finding it unhealthy and marshy, he determined to proceed to Montserrat."[1] They did not seem to like Montserrat much better, for, after the departure of the Spaniards, they returned to St. Kitts.

Here, then, are two occasions on which colonists might have been deposited on the shores of Antigua, the first involving English settlers under Anthony Hilton in 1628 and the second French colonists expelled from St. Kitts by Toledo in 1629. Each group examined the island and decided against it but for different reasons. The English considered Nevis more suitable because of the proximity of St. Kitts for supply, and, although it is not expressly mentioned, for defence as well. The French found Antigua too "unhealthy and marshy." Knowing nothing about the thoroughness with which these two groups investigated Antigua, it is dangerous to draw any conclusions from their criticisms of it. Yet it is interesting that the island was found unsuitable twice

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[1]V.L. Oliver, History of Antigua (London, 1894-99), I, p. xii.

before it actually succumbed to settlement. This is perhaps significant in the light of its situation today, because many believe that due to its irregular rainfall and its heavy clay soils it is still a marginal location for the growing of sugar cane.

A further comment upon the nature of Antigua is as disparaging as the others. Sir Henry Colt, en route to St. Kitts from Barbados in 1631, stopped at Montserrat. He remarked, "We would willingly haue beaten it further vpp vnto Antigo, beinge butt.7.leagues of, a place of moor securitye; but yt there is no water ther."[1]

Antigua was eventually settled in 1632 by Thomas Warner's son Edward who reputedly landed in the vicinity of Carlisle Bay on the south coast, the location of Old Road Village today. The factors which encouraged the St. Kitts residents to expand to Antigua are uncertain, but it may be supposed that even at that early date the island was becoming crowded. Warner's original colony of fourteen had been enlarged by additional settlers arriving on board the Hopewell in 1625, and in 1626 Warner himself had returned from a trip to England with 400 new colonists and more supplies. The French under d'Esnambuc had landed in 1625, and in 1629 they too had received reinforcements.

The population of St. Kitts was, of course, dispersed by the Spanish intrusion of 1629, but some--perhaps a

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[1]Harlow, p. 83, from "The Voyage of Sir Henry Colt."

Fig. 23.--De la Feuille's map of 1685.

large number--had merely withdrawn to the forested hills and returned soon after. Harlow adds, "Others who had been ordered to England retraced their steps as soon as the Spaniards' backs were turned."[1] Again a group of new settlers was sent from England, including those under Sir Henry Colt in the ship Alexander. Therefore, soon after the departure of Don Frederick de Toledo the population of St. Kitts was building up again. It is reasonable to assume that by 1632 it was large enough to induce them to consider expansion onto nearby islands; a sort of population pressure existed. Hilton's colony had been developing on Nevis for seven years, and Antigua was therefore a logical choice, being yet unsettled. The island of Montserrat was also available, and it was, in fact, settled in the same year as Antigua.

Harlow, curiously, omits mention of the settlement of Antigua in 1632 and states only that the island was settled by religious malcontents from St. Kitts in 1643 (and Montserrat as well). The 1632 date is indisputable, however, and Antigua had received official colonial administration by 1635. The fact that Thomas Warner's son, Edward, was appointed as leader of the colonizing party suggests that the project was considered an important one, that Antigua was regarded as a necessary addition to the prosperous and growing colonies of St. Kitts and Nevis. Of the prosperity of these islands there is no doubt, and it seems reasonable to assume that Warner, a sensible and energetic man, was promoting a scheme

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[1]Harlow, p. xxiv.

of expansion in the Leeward Islands.

A statement in Rochefort's history supports the idea that St. Kitts was prosperous and crowded enough in 1632 to induce settlement of nearby islands:

> Les deux quartiers qu'elle [the colony] occupait dans l'Ile de Saint Christophe se trouvèrent si etroits pour contenir une si grande multitude, qu'outre l'Ile de Nieves qu'elle avoit peuplée avant la déroute [the attack of Toledo in 1629] elle eut asses de force pour pousser en moins de 4 ans des nouvelles Peuplades dans celles de la Barboude, de Montserrat, d'Antigoa, et de la Barbade, qui 'Y sont merveilleusement accrues . . . .[1]

This attitude of expansion was certainly prominent a few years after Antigua's settlement, when the planters of St. Kitts proposed to colonize "the small but fertile Metalina"[2] in 1636 and to make an attempt on St. Lucia in 1639. The first did not come about at all, however, and the success of the second was terminated by a disastrous Carib attack two years later. In 1643, according to Harlow, settlers were dispatched from St. Kitts to Antigua and Montserrat:

> Wrangling and rioting had so become the order of the day that Warner at last determined to get rid of the unruly elements by shipping them off elsewhere. Accordingly in 1643 a party of Irish Roman Catholics were settled in Montserrat, and other religious malcontents were sent to colonise Antigua.[3]

If some of the so-called unruly elements of St. Kitts actually were sent to Antigua in 1643 as Harlow describes, this would have constituted a reinforcement rather than a colonization of Antigua, for it had been settled eleven years

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[1]C. de Rochefort, Histoire Naturelle et Morale des Iles Antilles (Amsterdam, 1716), p. 280.

[2]Harlow, p. xxvi.

[3]Ibid., p. xxviii.

before.

It is curious that Oliver, in his detailed summary of Antigua history, does not mention the shipment of "religious malcontents" to the island. If the event did actually occur, then it might be a reluctance to recognize a somewhat embarrassing aspect of the early settlement--that people were virtually expelled from St. Kitts for the trouble they caused and sent instead to Antigua. But Harlow at least suggests that their contribution to Antigua might have been valuable. "Religious enthusiasts are usually men of character and virility; and perhaps it was for this reason that these two settlements prospered and flourished."[1]

Agriculture in the young colony

The small colony on Antigua is seldom mentioned in the literature, and one of the things which remains unclear is how and when the nucleus spread from Old Road, where Edward Warner had landed, out into the flat agricultural land of the northern part of the island. However, it is known that the colonists were quickly at work growing tobacco as a cash crop. Whether they tended to neglect the cultivation of food crops for their own sustenance right from the beginning is uncertain, but it was not long before the criticism was made that there was too much emphasis on tobacco, as the following letter from the King in 1637 indicates:

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[1] Ibid., p. xxviii.

> They have mostly planted tobacco, to the neglect of cotton, wools, and other useful commodities which they had begun, & of corn & grain sufficient for the support of those plantations, which compels them to receive supplies from the Dutch & other strangers.[1]

This emphasis on the cultivation of a cash crop for export is characteristic of the West Indian colonies, not only in their early days, but even at the present time. It seems in contrast to the European settlements in the temperate regions, along the Atlantic seaboard of North America, for example, where the pioneers were renowned for their self-sufficiency and their ability to live by their own hands with less dependence on the supply ships from home. In the Caribbean the essential difference was that the climate was exactly suitable for the growing of certain crops which could not be grown in Europe and for which there was a strong demand. There was a great economic temptation, therefore, to produce these things, and the colonies were usually planted with this sole object in view--that of raising tobacco, indigo, cotton or sugar cane for European markets. Merchants therefore backed the colonizing ventures in the Caribbean, supplying transportation, provisions and equipment; providing a measure of defence and naturally encouraging the immediate production of salable products. This trend, pushed on to a more systematic development by the commercial interests in Europe, resulted in plantation agriculture based on slave labour, which was in terms of economics the most efficient manner in which Europeans could acquire tropical goods.

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[1]Oliver, p. xix.

Tobacco was the first important cash crop in Antigua, and in other British Leeward Islands, notably St. Kitts. The plant itself had been cultivated by the Indians in pre-Columbian time, and the Spaniards had raised it during the sixteenth century for sale in Europe. The first Englishmen to cultivate it were those of Leigh's brief colony on the Wiapoco River in 1605, for it was by this time a highly popular commodity, playing an increasingly larger part in Atlantic trade. The colony established by Roger North on the Amazon delta in 1619 was expressly designed to produce tobacco. With the failure of the various settlement schemes along the Guiana coast the cultivation of tobacco spread into the Lesser Antilles with colonization there. The expansion from the island of St. Kitts which resulted in the settlement of Antigua in 1632 had at its foundation the prosperity which tobacco had built.

Tobacco was responsible for the early prosperity of the Leeward Islands, but it proved an unsound basis for their economy. The crop spread to the mainland of North America, not being confined to the tropics, and by 1635 there was active competition from the planters of Virginia, who produced a better quality and found better prices in European markets. The commodity became over-produced, and prices fell low enough to make the West Indian colonists try other crops. "Mais depuis que la grande abondance qu'on en a fait a ravallé le prix, ils ont planté en plusieurs endroits des

Cannes de Sucre, du Gingembre, & de l'Indigo."[1]

The heyday of tobacco was therefore a very brief one, for in 1639 the English and French on St. Kitts agreed to destroy their tobacco plants and turn to other crops, principally indigo. It is probable that the importance of tobacco in Antigua also declined at this time, although its cultivation was important as late as 1671. Tobacco was replaced by indigo and to a smaller extent by cotton and ginger, and the middle years of the century may be regarded as ones in which an important transition was getting under way from a tobacco monoculture to one of sugar. The transition period was chiefly one of experimentation with new crops, of a desperate trial and error effort to get back into a secure trading activity following the severe blow which the Virginian tobacco growers had dealt to the islands. The first reaction was a move towards diversification: in 1656 a letter from Governor Keynall to London identifies the chief crops as tobacco, cotton, sugar and indigo.[2] In 1660 the low tobacco prices produced an increase in the acreages of ginger, sugar and indigo,[3] and from this time on tobacco steadily declined in Antigua, having held on with difficulty some twenty years longer than in St. Kitts.

It is significant that the economy did not permanently retain much measure of diversity, but swung back resolutely

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[1]Rochefort, p. 303.
[2]Oliver, p. xxvii, quoting Governor Keynall.
[3]Oliver, p. xxviii f.

to another monoculture, that of sugar cane, which has persisted until the present day. Antigua became a sugar island in the second half of the seventeenth century and it is still one. The eggs were put all in one basket, with the attendant dangers of losing virtually everything through drought or disease or price fluctuations. Consequently, the struggle to survive has been a hard one ever since.

The exact date of the introduction of sugar cane to Antigua is unknown but was probably in the 1650's. In 1671 the governor of the Leeward Islands, Sir Charles Wheeler, reported on the economic state of the islands:

> The commodities are sugar chiefly; tobacco in great quantity in Antigua, so much indigo & cotton that he hopes his Majesty will favour them in the prohibition of Cyprus cotton and East India Indigo.[1]

This implies that by 1671 sugar had become the major crop in the Leeward Islands, but that tobacco was still a significant crop in Antigua. It continued to decline, however, and was not mentioned in a list of prices of the island's products given in 1721.[2]

When sugar became the major crop of Antigua is again rather vague, but a letter from Wilkins to Platt in 1677[3] gives the value of various commodities in terms of sugar, which indicates that is was by then the principal crop in value.

The art of sugar-making had made a long and

1Oliver, p. xlviii, quoting Governor Wheeler.
2Oliver, p. xciv.
3Ibid., p. lxiv, quoting Wilkins.

Fig. 24.--View towards Blackman's Estate. A typical scene in the limestone district includes fields of sugar cane, the ruins of a sugar mill and lofty palms turning away from the trade winds.

circuitous voyage before being introduced to the English and French colonies of the Lesser Antilles. Canes had been brought to the Caribbean from Spain in the opening years of the sixteenth century, and one Gonzalo de Velosa evidently constructed the first mill, on Hispaniola, in 1503.[1] Spaniards carried the sugar culture into South America, and it reached Brazil by the middle of the sixteenth century. Dutch traders encountered it there and began to spread it northward again into the eastern Caribbean area.

Barbados received and planted its first sugar canes in 1637,[2] and within fifteen years the settlers were proficient in sugar-making. The plants and the technique continued north along the island chain, carried and dispersed by imaginative Dutch traders, who sought to encourage the cultivation of a good export product among the islands in order to increase their own trading activities.

Martinique also began growing sugar prior to 1640. It is reported by Rochefort that M. de Poincy urged the cultivation of this crop because it was impossible to compete with St. Kitts and other British islands in tobacco production. He was therefore willing "de tenter d'autres moyens, pour faciliter la subsistance des Habitans & pour entretenir la commerce."[3] Since St. Kitts stopped tobacco production in

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[1]A. P. Newton, The European Nations in the West Indies (London, 1933), p. 21, from Oviedo, Historia General de las Indias.

[2]Parry, p. 64.

[3]Rochefort, p. 311.

1639, de Poincy's encouragement of other crops, including sugar, must have come prior to that year.

From 1650 onwards sugar cane cultivation became more and more important in Antigua. However Rochefort, writing in 1658, does not give the impression that sugar has become king quite yet. He speaks of the exchange of agricultural produce for imported goods in the stores. "Les marchandises que les habitans présentent en échange en Toute ces Iles, se réduisent à cinq espèces principales, savoir au Tabac, au Sucre, au Gingembre, a l'Indigo, & au Cotton."[1]

Sugar did not become the main crop overnight. The process of making sugar is a rather complicated business, hinging on the fact that the cane must be crushed soon after being cut in the fields. Before transportation methods included trucks and railways, it was necessary to have many crushing and grinding mills, and so it became the custom for each estate to have its own facilities for processing the cane into rough sugar. Apart from the time needed to design and construct the various buildings and to assemble the machinery, a large amount of capital was required. The erection of mills took time and money, and so the displacement of the established crops of cotton, indigo, tobacco and ginger was a gradual, although persistent, process, lasting all through the seventeenth century. The following century was one in which the benefits of this agricultural policy and

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[1] Ibid., p. 303.

this investment on the part of planters was to pay off.

The most important aspect of the seventeenth century, after the colonization of the island, was the establishment of the sugar culture. Three other aspects of that century deserve discussion, however. These are:

1) the attacks of the Carib Indians

2) the growth of population

3) the development of slavery

The attacks of the Carib Indians--The presence of the Carib Indians discouraged settlement in the Lesser Antilles. These fierce natives were first observed by Columbus on his second voyage, when he stopped at Guadeloupe. A small exploration party went ashore, became lost and eventually found its way back to the ship a few days later. In its travels the group came upon many deserted Carib villages, where heaps of human bones and other signs indicated cannibalism. Some captive Arawak natives, supposedly being fattened for later culinary treats, were freed and taken back to the ship. These natives remained on board as guides during the cruise through the Virgin Islands. Certainly the experiences of the men on the Columbus voyage did not make them overly sympathetic to the islands of the Lesser Antilles, and, as we have seen, the Spaniards appeared quite content in the Greater Antilles and on the continent for a few centuries.

Other nations, however, took on the task of placing colonies in the Carib-held islands: English, French and Dutch shared in this enterprise in the first half of the

seventeenth century. The threat of hostile aborigines was easily accepted by England and France, who were at the same time encountering fierce tribes of forest-dwelling Indians along the North American coast. Neverless, the adverse effect of the Caribs was great.

On more than one occasion young and unstable settlements were completely destroyed by the attacks of Caribs--for example, on St. Lucia in 1605 and again in 1641, when English colonists were either massacred or driven right off the island, and on St. Kitts, where the small colony of Anthony Hilton on the east coast was attacked and broken up in 1627. At other times Carib attacks succeeded in destroying buildings by fire, and killing or capturing some of the inhabitants, such as the attack on Antigua in 1640, when the Governor's wife was abducted. While St. Kitts and Antigua had no resident Indian tribes, they were often attacked by Caribs from nearby islands, such as Guadeloupe. St. Kitts repulsed the canoe-borne savages on November 5, 1625, and again on December 31.[1] It was largely the threat of such sudden attacks that brought about the initial solidarity between the English and French settlements on St. Kitts, however short-lived this relationship proved to be.

Antigua was attacked in 1672. In 1674 Nevis repulsed a Carib war party, and a counterattack was made by the English of Antigua against the native stronghold of

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[1]Harlow, p. xix.

Dominica. Barbuda was attacked by the natives in 1631. The Carib hostility declined during later years. As the natives became more and more outnumbered they were increasingly confined to the islands of Dominica, St. Lucia and St. Vincent, and although they still constituted a significant force in West Indian affairs, particularly in their effect on French-English relationships, their acts of aggression became fewer. Their last active operation was an uprising on St. Vincent as late as 1795, at which time English settlers had been cultivating the island for almost forty years. This rebellion was their final downfall, for the British deported 5000 of them--virtually all--to an island off British Honduras.

The real center of Carib strength was always the Windward Islands, and there is no doubt that their effect in delaying colonization by Europeans was greater there than in the Leewards. Nevertheless, the Leeward Islands were severely harassed by the operations of the exceedingly mobile Indians, as the attacks on St. Kitts, Nevis, Barbuda and Antigua show. Because they killed and burned they were often a deterrent to settlement and expansion. On the other hand, the constant threat of attack perhaps drew the colonists together in more closely united groups and gave them determination and courage through a common hardship. In any case, the effect of the Caribs was definite: "The natives were in truth a very distinct factor in the history of West Indian settlement, strong enough to be carefully reckoned with, useful as

allies, dangerous as enemies."[1]

The growth of population

The first reference to Antigua population is for the year 1640, when there were evidently thirty families on the island. This statement is found in Johnson's description of Antigua (1930) and is repeated in Oliver's history (1899). Rochefort reports a population of seven or eight hundred a few decades later, and Johnson's figure for 1666 is 800, but he specifies that this includes 500 slaves. The source of Johnson's figures is not stated. Neither does Rochefort state whether his figure of seven or eight hundred includes a number of slaves. If Johnson's information is correct, then Rochefort's figure must be a total of slaves and whites.

In 1675 Antigua is said to have 1,052 armed men and 570 slaves.[2] The figure of 1,052 armed men suggests a total white population of perhaps two or three times as much, which would be a large increase from the estimate of 700-800 by Rochefort (1658) and 300 by Johnson for 1666. Fortunately, a census was taken a few years later, in 1678, and the governor, Sir William Stapleton, reported 2,308 free persons and 2,172 slaves, making a total of 4,480.[3] It is by these more reliable figures that we must judge the others.

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[1]Sir C. P. Lucas, Historical Geography of the West Indies (Oxford, 1905), p. 42.

[2]Oliver, p. li.

[3]Census of the Leeward Islands, Part F of the West Indian Census Report, 1946 (Kingston, Jamaica: Gov't. Printer, 1948), p. ix.

The census figure of 2,308 free persons in 1678 supports the estimate of 1,052 armed men three years previous to that. If Johnson's figure of 300 whites in 1666 is correct, then an increase of just over 2,000 white people occurred during that twelve year period.

Between the 1678 census and the end of the century there is another population estimate, again in Johnson, which reports 6000 whites in 1690 and gives no figure at all for slaves. Whereas such a figure might be admissible as a total of free persons and slaves, it is quite unacceptable as the number of whites alone. The 1678 census counted 2,308 whites, the 1720 census counts 3,672:[1] a peak of 6000 half-way between the two is highly improbable, and this figure should be overlooked.

There is reason to doubt all the casual remarks of visitors concerning populations and even the results of the censuses, for a census in the seventeenth century was not the highly organized and efficient thing it is today. The 1678 census figures, by virtue of their compilation in an official statement, assume priority over the various other estimates discussed above. This much is clear: the total population of Antigua rose from about thirty families (say 100 persons) in 1640 to seven or eight hundred by about 1660 and exceeded 4000 by 1678.

This is enough to indicate the speed at which the population grew, particularly in the later years of the

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[1] Ibid.

century. This trend continued: the total population in 1720 was approximately 23,000, and in 1730, almost exactly a hundred years after its colonization by a handful of men from St. Kitts, Antigua boasted almost 27,000 people.[1] It is significant, however, that this rapid growth was almost entirely within the slave population, due to the importation of Negroes from Africa and the natural increase of those on the island. The white population was just over 2000 by 1678, and in all probability did not exceed 3000 during that century. It rose slowly during the eighteenth century but then declined steadily towards its low of 996 in 1946.[2]

An interesting aspect of Antigua's growth in the seventeenth century is the haste with which the population overtook that of St. Kitts. St. Kitts, settled nine years before Antigua, had grown rapidly and had more or less overflowed onto adjacent islands, including Nevis, Montserrat and Antigua. As mentioned earlier, it was in part a population pressure that brought about the settlement of Antigua, and it is apparent that despite the expansion from St. Kitts in 1632 the pressure continued to mount. Merrill states that by 1650 both Barbados and St. Kitts were overpopulated,[3] and probably Antigua at this time received some colonists from St. Kitts as well as from Britain. Antigua's population continued to

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[1] Ibid.

[2] Ibid., p. xvi.

[3] The density of white population alone in Barbados in 1645 was 217 per square mile (Newton, p. 195). Admittedly, that of St. Kitts was much less.

mount rapidly, and by the time of the 1678 census its total population surpassed that of St. Kitts by a sizable margin, as the following table shows.

TABLE 1

POPULATION OF THE LEEWARD ISLANDS[a]

	Antigua	St. Kitts	Nevis	Montserrat
Free	2303	1509	3521	2682
Slave	2172	1436	3860	992
Total	4480	2945	7381	3674

[a] Census, 1946, p. ix.

Antigua is considerably larger than St. Kitts, having an area of 108 square miles as compared to 67, and more of the land is cultivable, as the island is less mountainous. The density of population in 1678 works out to about 42 people per square mile for Antigua and 44 for St. Kitts, and so, despite the superiority in numbers, Antigua at that time was settled to just about the same extent as St. Kitts.

The development of slavery

The commercial production of sugar cane by individual planters and the manufacture of sugar were processes that required much capital investment as well as skill and efficiency. But the real foundations of the sugar plantations lay in their labour force, and when cane was first introduced to the Lesser Antillean settlements in the seventeenth century no

such force existed there.

The Spaniards had gone on to the Greater Antilles where docile Arawak natives could be used to do the hard work of mining and farming, and had by harsh usage brought the gentle race to the verge of extinction. In the early years of the sixteenth century a number of Lucayos from the Bahamas were utilized.[1] Negroes from Africa were imported as the Arawaks and Lucayos died off, beginning as early as 1503,[2] and within a quarter century of Columbus' arrival in the New World a regular trans-Atlantic slave trade had developed. It continued for more than three hundred years and brought to Latin America an estimated fifteen million African Negroes.[3]

The transportation of primitive Negro tribesmen from the forests of west Africa to the agricultural colonies in the West Indies was a business which proved attractive to many. The Portuguese were most active in the slave-carrying trade during the sixteenth century, despite the fact that African slaves destined for Spanish colonies in the Caribbean had to be cleared first through Seville. After 1595 the Spanish authorities relaxed enough to allow asientos on the African coast to ship directly to the New World colonies.

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[1]Newton states that between 1504 and 1508 about 40,000 Lucayos were brought to Hispaniola from the Bahamas (p. 19).

[2]Ibid. Perhaps the first were just personal servants. Parry reports 250 slaves sent out in 1510 for work in the mines (p. 17).

[3]This estimate, by Kuczynski, is considered by Zelinsky to be conservative. Wilbur Zelinsky, "The Historical Geography of the Negro Population of Latin America," The Journal of Negro History, XXXIV, No. 2 (April, 1949), 158.

During this time, of course, there were a number of foreign interlopers who carried on an illicit slave traffic.

After 1640, when Portugal split from Spain, the Dutch arose as the principal carriers of human cargo, although Spain officially maintained a rigid monopoly on the slave traffic and forbade her colonies to buy from foreign ships. The Dutch, nevertheless, did well by the trade and were instrumental in serving commercially, to an astonishing degree, not only Spanish possessions but those of the French and English as well. The Dutch trade with English colonies certainly influenced the English colonial authorities and helped bring about the Navigation Laws of 1651, which were designed to stop such ignoble proceedings. And not long afterwards the English Crown granted a charter to the Company of Royal Adventurers Trading into Africa, which became in 1672 the Royal Africa Company; this organization was designed principally to supply African slaves to the British West Indian colonies.

Surprisingly little was written about the introduction of African Negroes into the English islands. It is difficult to understand why such an unusual and significant event as the first purchase of African slaves did not cause more stir and was not recorded in the early literature, however limited that is. In the Spanish colonies slave-holding was a custom well-known in the mother country, and slaves possibly accompanied the earliest colonists. But the purchase of Negro slaves was surely a great curiosity for

English settlers, and one would certainly expect histories to have rather definite comments on it. .

One thing is clear: the first slaves were provided expressly for the cultivation of sugar and they were introduced by Dutch traders. Harlow quotes an early description of the Dutch supplying "negroes, coppers, stills, and all other things appertaining to the . . . making of sugar."[1] And Newton, in discussing the first attempts at sugar-making in the British islands, says:

> They found at once that white labourers were unsuited to raising the crop, but the work could be done effectively by negro slaves under the direction of a few overseers, and those negroes the Dutchmen were anxious to supply.[2]

The introduction of Negro slaves was contemporaneous with the beginnings of sugar cane cultivation and was managed by the Dutch, who brought the technique of making sugar, the cane itself and the equipment for the mills and boiling houses, as well as the African slaves.

I find no reference to the use of Negroes in Antigua prior to the commencement of sugar raising, the labour requirements for the raising of tobacco, indigo, ginger and cotton being considerably less and the land holdings being much more modest in acreage than the sugar plantations which followed. Pere Labat's books include plates which portray Negroes toiling in the processing of indigo, manioc and tobacco on plantations, but it is most likely that slaves were

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[1]Harlow, p. xxxviii, from the Sloane MSS.
[2]Newton, 197.

given these occupations following their introduction for the sugar industry, and that prior to the growth of sugar cane there were no Negro slaves to do these tasks.[1]

Barbados, which probably adopted sugar most rapidly, is said to have had a few hundred Negroes by 1640, over 6000 by 1645 and more than 20,000 by about 1650,[2] which illustrates the incredible speed with which the importation proceeded. In Antigua the use of slaves in agriculture began a few decades later; Johnson mentions a population of 300, including 500 slaves, in 1666, and for 1673 raised the slave number to 570. In the last quarter of the century the total rose to almost 12,000, and the increase accelerated in the 1700's, which witnessed the peak of the sugar culture.

Quite a change came about, therefore, in the structure of society in Antigua in the seventeenth century, a change which was nothing less than drastic in its aspect and meaning, and one which established a basis for the growth and development of Antigua for the succeeding three centuries. The institution of slavery explains much of the character of the island, its agriculture and its inhabitants even today. Although slavery was abandoned in 1834, it has never been forgotten and its memory still looms large.

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[1]Pere Labat, Nouveau Voyage aux Isles de l'Amerique (Paris, 1722), I, 272 (indigo), 160 (manioc and tobacco); II, 314 (tobacco). Two of these plates are from engravings of 1683 by Mallet; one is by du Tertre, 1667.

[2]Newton, p. 197.

It may be asked why it became necessary to import African slaves when sugar became popular, since the islands were already receiving a number of indentured servants from Europe. There were two reasons why the white workers did not prove suitable. Firstly, they were not available in adequate numbers, a defect which later in the eighteenth century caused the complete collapse of the indenture system. Secondly, they were not capable of doing good hard field labour in a hot tropical climate, not, at least, on the diet which their employers generally supplied. The Negroes were more attractive specimens physically, were better able to withstand the conditions of climate and work and were more readily available.

The seventeenth century witnessed a series of changes: poor tobacco prices resulted in the introduction of sugar; sugar cultivation brought about the beginning of slavery; indentured servants were discharged under the competition from slave labour; poor proprietors were gradually displaced or absorbed by the wealth which the combination of capital, sugar and slaves produced. No place was left for the small-scale farmer growing a variety of crops, employing a few white labourers; the time approached when only large plantations growing large amounts of sugar and stocked with quantities of slaves could prosper.

The establishment of plantations meant that a number of small holdings were bought up by a smaller group of owners. There followed a slight depopulation of the white

element as former proprietors and indentured servants left to seek their fortune elsewhere. Also, if we concede that a plantation has a minimum size, below which it cannot make its way financially, then the plantation system put a limit to the number of planters the island could support. Consequently, when the white population reached 2308 persons in 1678, it was not destined to mount much higher and was only 2892 in 1707 and 4300 (its maximum) in 1805. The rapid and steady increase of the Negro population has already been emphasized, and now it becomes clear why the white population did not show any signs of keeping pace; it was simply because the plantation system, by its nature, restricted further growth of the free population beyond three or four thousand persons. It was a man-land relationship which had as its basis the optimum plantation size of about 200 acres, and it established an effective limit on a segment of the population.

The white population reached a limit and fluctuated through suceeding centuries a little above and below that level. The Negroes, on the other hand, grew in numbers with alarming persistence. In 1678 the numbers of free persons and slaves were roughly equal, each a little over 2000. But by 1707 the slave population had increased to almost 13,000, while the whites numbered only 2892. There is no doubt that the whites were beset by a growing feeling of insecurity and fear, and that this attitude drastically modified their way of thinking and their behaviour towards the slaves. It is reflected in the severity of the code of punishments which

maintained slave discipline and supposedly guaranteed their own safety from any uprising.

If the slave numbers alarmed the whites, why did they not cease the importation? Because they were hopelessly entangled in their own web. They were desperately eager to acquire wealth, and it was considered that profits from a certain acreage were directly proportional to the number of slaves. The prestige factor was also present; wealth and position were generally measured by the number of slaves one owned. So slaves were still purchased greedily from the slave ships, and the fear continued just the same.

Another aspect of the slave system was that it made the white folk indescribably lazy. It is easy to be spoiled when labour is cheap, but this was a serious fault for, as Lucas points out, "The surroundings of the colonists were directly opposed to the true spirit and methods of colonisation."[1] In other words, they became accustomed to having everything done for them and thus lost the initiative and energy which is required of colonists. The story is the same wherever a plantation monoculture used slave labour to produce sugar in the sixteenth and seventeenth centuries. In his fascinating work on the colonization and growth of Brazil Gilberto Freyre describes "these flabby males with the hands of a woman who were so over-fond of their hammocks and so voluptuous in their slothfulness, these aristocrats who were ashamed of having legs and of setting foot to the

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[1]Lucas, p. 71.

ground like any slave or plebeian,"[1] and he gives countless illustrations of their laziness and the incredible opulence within their society.

Summary of the seventeenth century

In Antigua the full effects of slavery and sugar are more to be seen during the eighteenth century, but the seventeenth century is a very important one, because it is the period of time during which so many of the roots and causes of later events are born. Antigua is colonized in 1632, and a small number of Englishmen set about growing tobacco and provisions, later adding to their crops cotton, indigo, ginger and sugar. Despite Carib attacks the population grows steadily as nearby St. Kitts becomes crowded and as Englishmen respond to the challenge of emigration from the mother country, either as land-owning proprietors or as indentured servants. With the decline of West Indian tobacco sugar begins its rise, and slavery--promoted by the Dutch just as the growing of sugar was--quickly becomes an indispensable part of the sugar industry. Large plantations are established by men of means, and the small plots--formerly the backbone of the island's agriculture--disappear. The Negro slave population surpasses that of the whites by about 1680, and the social and economic pattern is laid down for the next century.

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[1]Gilberto Freyre, The Masters and the Slaves; a Study in the Development of Brazilian Civilization, trans. Samuel Putnam (New York: Alfred A. Knopf, 1956), p. 429.

It is tempting to assess quite sketchily the events of this period in relation to remarks made in the Introduction concerning the interaction between man and the land and the effect of external factors on the attitudes and achievements of colonists.

The remarkable thing is the significance of external factors:

1) Antigua was settled not because of its physical attributes (its physical short-comings actually discouraged settlement more than once) but because it was profitable for the settlers of St. Kitts to expand.

2) The choice of cash crops was made to suit the demand for certain products in England, and agriculture was immediately at the mercy of international conditions of demand and price. Tobacco cultivation declined not because Antigua soil or climate was particularly unsuitable but because Virginia produced the product more efficiently.

3) The introduction of sugar cane, undoubtedly the most significant event of the century on Antigua, was the work of the Dutch, who wished to market the slaves from their African barracoons and stimulate their own trade in the Caribbean. It was not a move designed by Antiguans to suit local conditions but a course of action proposed by foreigners, which they adopted. It, in turn, brought the institution of slavery.

4) The changes in land tenure from many small holdings to fewer large estates were certainly not a response

to physical conditions but to economic ones, a direct result of the realization that sugar cane, which could be produced only in the tropics, was a profitable crop eagerly sought in England.

It seems a glum outlook for the cause of geographic determinism. But the case is not evenly contested; there is virtually no information concerning the physical geography of Antigua in the seventeenth century. As usual the compilers of public records and the historians are reluctant to give geographic information, and there is scarcely a mention of crop acreages, methods of cultivation, water supply, soil fertility, or even whether the climate proved agreeable to everyday life. Had the early settlers passed down any written accounts we might be able to discover some of the finer details of their adaptation to the physical conditions of the land.

IV. PROSPERITY WITH SUGAR

The sugar culture

The eighteenth century saw the sugar culture at its maximum extent in Antigua. Those legendary days are immortalized in written accounts and numerous illustrations and prints. An American by the name of Ben Quinn, who has restored the old plantation dwelling house of Parham Hill to an approximation of the old style of comfort, possesses a collection of early prints of Antigua which is almost certainly the largest single such collection existing in one place. A most instructive set is William Clark's Ten Views of the Island of Antigua,[1] a rare group of illustrations, some of which are reproduced in Deerr's History of Sugar. It is not merely that these serve to demonstrate the technique of sugar-making in the days of slavery, the type and layout of equipment in the boiling houses, the methods of cultivation of the cane and the dress of the Negroes and whites, for these things have all been described at length by early writers anyway; but the prints give a wonderful impression of the immensity and magnitude of the sugar culture. In particular, they give a strong atmosphere of slavery, an idea of the hugeness of the master-slave social relationship, a picture of the contrasts between elegance and poverty, between owners and

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[1]London, 1823.

slaves, between black and white. There is also a feeling of hard work, of driving men and machinery hard, of overcropping fields that should never be cleared, of trying to get maximum profits while the prices are high. There is a factory appearance in the sugar buildings; a quite modern atmosphere of full production exists. Finally one receives a vague impression of numbers and the disproportion between blacks and whites. Slaves are portrayed in field gangs, planting cane, or in the boiling house sweating and working by the steaming coppers, or in the crowded bustle of the Sunday market amidst an assortment of hens, dogs, goats and pigeons. The white people, on the other hand, are seen here and there, perhaps a couple in a carriage, an owner riding on a horse through his fields, or an overseer supervising a work gang. The blacks are undertrodden but numerous and strong. The whites hold the whip but are few and weak.

Sugar brought good profits to many plantation owners, and there was always expansion while the boom existed. Almost all the natural woodland of Antigua was cleared off to make room for sugar cane, and in view of the topography this is quite surprising. Cane was grown on slopes which are difficult to climb, and windmills were built on almost inaccessible ridges in the volcanic district. Plantation owners did not hesitate to clear and plant on slopes which today may be cleared only with special permission of the agricultural authorities.

It is of course difficult to find concrete information

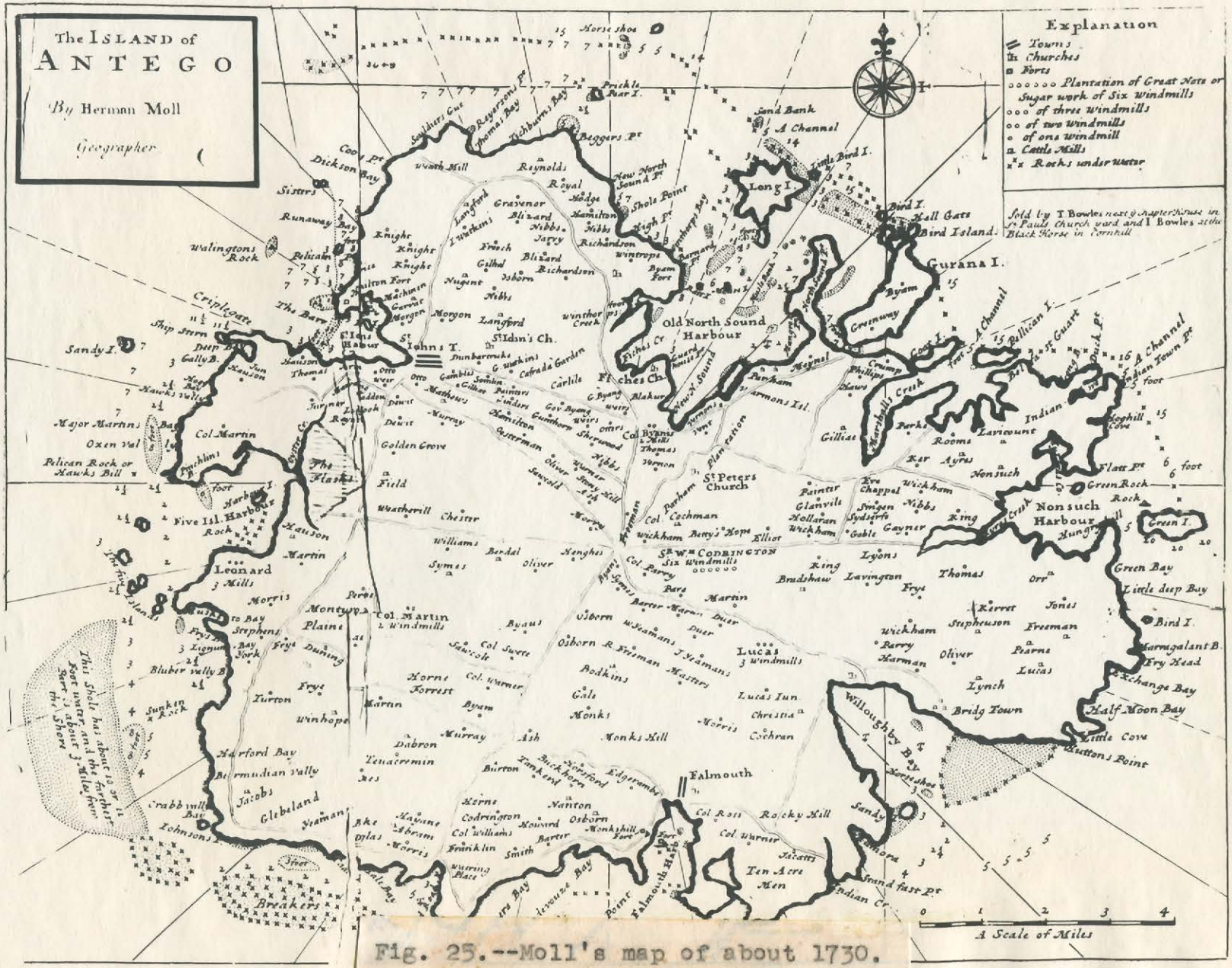

Fig. 25.--Moll's map of about 1730.

on early clearing, but much may be deduced from the accounts written by visitors or from maps which were compiled from time to time. An account in 1774 describes the appearance of Antigua from the sea: "The ground is vastly uneven, but not very high; the sugar canes cover the hills almost to the top, and bear a resemblance in colour at least to a rich field of green wheat."[1]

A map by Herman Moll, drawn between 1730 and 1740, shows almost forty sugar mills in the volcanic district (see figure 25), the most mountainous part of the island, and Jefferys' map of 1768 shows more than 150 mills in this section, although the symbols are indistinct. Luffman's map of 1787 shows over 60 mills--43 windmills and 20 cattle mills. Both cattle-driven mills and windmills were used, depending upon the location of the mill. The cattle mills appear mainly in the sheltered or leeward side of the volcanic district, namely Bermudian Valley Division and Old Road Division, and also in certain other parts of the island where local topography deflects the northeast winds; for instance, in Nonsuch Division several cattle mills exist on Luffman's map.

Antigua's relief favoured the widespread use of windmills, due to the gradual slope upward from the northeast corner to the high ground of the southwest. Good spots for

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[1]Journal of a Lady of Quality, ed. C.M. Andrews and E.W. Andrews (Yale Historical Publication; New Haven, Conn.: Yale University Press, 1921), p. 74.

Fig. 26.--View in the volcanic district. Sugar cane once covered even the steep slopes of the southwest. This photograph was taken from a ruined windmill on one of the highest ridges.

windmills existed virtually all over the limestone district and the central plain, and the advantage of strong, steady winds apparently attracted many to the steep windward slopes of the volcanic district as well, where the disadvantages of steepness and inaccessibility were apparently more than compensated for by the winds. On a ridge above the village of Hamiltons there still stands an old windmill, at an elevation of almost exactly 1000 feet, bordered on the east and west by very steep slopes; it is said that cane was actually carried up to this mill from cane fields on lower slopes (see figure 26).

The location and number of windmills on early maps indicate how much of the land must have been cleared. Cater estimates that by the eighteenth century all of the natural vegetation of Antigua had been either totally destroyed by the clearing for cane or slave gardens or "at least radically altered by over-exploitation,"[1] such as cutting wood for fuel or charcoal making.

Deforestation and water supply

It is impossible to say whether the extensive forest clearing of the eighteenth century produced any soil erosion, although unless great care were taken it would have certainly done so on the steep slopes. Cater in 1944 felt strongly that this was so: "The destruction of the forest throughout the island must have led to very severe soil erosion, particularly

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[1]J.C. Cater, Forestry in the Leeward Islands, Development and Welfare in the West Indies Bulletin No. 7 (Barbados: Advocate Co., 1944), p. 8.

in the volcanic area of the southwest."[1] It is true that there was an evident concern about the shortage of water on the island, which might have been partly a result of the removal of the natural vegetation. The water shortage had been referred to in various accounts of Antigua even before settlement, however, and by 1700 the size of the population and the consequent large demand on the limited water resources were probably mostly responsible for the public outcry. In 1716 a water shortage on the windward side of the island made it necessary to bring some by sloop from Barbuda, and the possibility of distillation of sea water was discussed. Five years later the Body Ponds were reserved as a public watering place, and in 1724 a law was passed forbidding the cutting down of trees near water ponds--a rather interesting enactment as it showed some knowledge of the importance of tree growth in the hydrologic regime; it implies that the authorities had attributed the water shortage at least in part to the clearing of the land.

In 1726 there was a bad drought, and water was imported from the French islands. Another dry year occurred in 1731 and the sugar crop was very poor: "There is a great want of Rain, little Sugar, and many Ships waiting for it."[2] The harmful effect of drought years on the sugar crop of the following year has been shown clearly by Auchinleck by a

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[1] Ibid.
[2] Oliver, p. xcviii.

comparison of rainfall figures and sugar production.[1] The sugar seems in direct proportion to the precipitation. In 1779 a severe drought brought this comment: "Instead of 20 to 30,000 hogsheads of sugar this year there will be but 400."[2]

Whereas in 1671 it was reported that most of the islands were "destitute of timber, Antigua only excepted,"[3] the next century saw Antigua depending heavily on imported timber for construction, the making of sugar casks and so on. Deforestation not only made a contribution to erosion and water shortage, but also put one more item on the import list. Another drought in 1789, during which no rain fell for seven months, resulted in the death of 5000 cattle, and Sir William Young made the comment a few years later, "The whole is a picture of disappointment, in land, beast, & man."[4]

Droughts of severe type occurred, then, in 1726, 1731, 1779, 1789 and possibly at other times. Sugar production suffered during these periods, but these unfortunate dry spells, whether due to deforestation or not, only made small subtractions from the prosperity which sugar monoculture built in this century.

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[1]Auchinleck, Rainfall of Antigua, p. 9.
[2]Oliver, p. cxxiv, quoting a letter from Gov. Stapledon.
[3]Ibid., p. lxviii.
[4]Sir William Young, A Tour through the Several Islands of Barbadoes, St. Vincent, Antigua, Tobago and Grenada, in one volume with Bryan Edwards' An Historical Survey of the Island of Saint Domingo (London: John Stockdale, 1801), p. 283.

The prosperous planters

It is true that the planter class earned much money, built great houses and lived well, but it is also true that they spent a great deal on the upkeep of their plantations, paid taxes to the government, commissions to their London factors and salaries to their overseers. In a surprisingly large number of cases their expenses exceeded their profits, and their business was run at a loss--a loss which mounted higher and higher and eventually brought about the degeneration of the plantation and a host of financial haggling and family troubles. Richard Pares' reconstruction of the history of an estate on Nevis provides an interesting insight into this process.[1]

The decay came later, but in the 1700's the outward apparel of the sugar industry demonstrated its wealth. There is little doubt that apart from the personal discomforts which the climate may have produced the Antiguan planters lived in a more luxuriant fashion than they would have in England. Visitors hastened to express their surprise and delight when confronted with extravagant meals, boasting not only traditional English dishes of beef, mutton and poultry but also a generous sprinkling of local delicacies such as turtle, various fishes, land crabs and a variety of fruits, the whole comfortably accompanied by imported wines and served in a most elegant manner by smartly dressed Negro servants.

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[1]Richard Pares, A West Indian Fortune (London, 1950),

And there were other aspects of the wealth: large well-furnished houses, fine linens and silks, table silver, horses and carriages, and of course clothes. The trappings of wealth displayed by Antigua estate owners was not confined to the island. Nor was it attributable solely to the vast and plentiful natural resources of the island, for the principal resource had been the forests, and they had been ruthlessly destroyed. Land, sunshine and forty inches of rain a year provided the basis for sugar fortunes but only when coupled with imported slave labour from Africa. The splendour of the sugar culture in this period was in the last analysis the result of the European demand for sugar, which supported the price. It was in no sense confined to Antigua, the Lesser Antilles, or even the West Indies but was equally dominant in various other tropical regions. High European prices around 1700 produced "not only a lustful but an extravagantly luxurious mode of living among the sugar-planters of Brazil,"[1] and the planters there became accustomed to have virtually every task performed for them by slaves. The story was much the same in the southern states of the United States a century and a half later.

Few people would venture to say that acquiring wealth is bad, but in many cases it is gained at the expense of others. In the case of the sugar planters, the ones who contributed most heavily to their prosperity were the Negro slaves and, to a lesser degree, the indentured servants.

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[1]Freyre, p. 426.

Both these groups supplied very cheaply the labour upon which the plantations were built and maintained, and they suffered deeply in the process. The planter aristocracy, however, may be excused perhaps for getting rich by exploiting others, because such things have been common throughout history and are only a reflection of personal greed, which everyone possesses to some degree, even the exploited. But sometimes wealth itself produces effects which are harmful to the society which originally produced it.

Absentee ownership

What was most serious was the destruction of the feeling of attachment between the men and the land. It is often described as "absenteeism," but, although the word is descriptive and may suggest mental pictures of rich West Indian planters lounging in London clubs while their plantations deteriorate under the corrupt and inefficient management of an overseer, there is more to it. Absenteeism was the tendency of the planters to return home to England and leave their West Indian estates temporarily in someone else's hands; there were often good reasons for going, perhaps to get a bit of relief from the hot, unfamiliar climate, to escape for a time the small island pettiness and find variation and perhaps stimulation of a sort amidst the bright lights of London, to see family and friends and, most important, to inspect the marketing end of the sugar business and carry on business transactions with the sugar agents. The trouble was that such visits became too frequent or too

long and in many cases became permanent. During the owner's absence the plantation was often badly run, the buildings neglected, the profits squandered by the manager, or worse.

The following description of absentee landlords was written in 1774 by an English "Lady of Quality" on a tour through the West Indies and America:

> They neglect their plantations and leave their delightful dwellings to Overseers, who enrich themselves, and live like princes at the expence of their thoughtless masters, feasting every day on delicacies, which the utmost extent of expence is unable to procure in Britain.[1]

The prosperity of Antigua naturally depended upon the efficient and continuous operation of its many plantations, and as the proportion of absentee ownership increased so the vigour of the total economy decreased. Not only was absenteeism harmful in the economic sense but also in a social one; it acted to the detriment of a true community spirit on the island, an important factor in the economic and military rivalries of the West Indies. Antigua, according to the author of the above quotation, had a smaller proportion of absentee owners than "any of the other Islands, which gives it a great Superiority."[2] The problem still existed, however, and an act was passed in 1740 taxing absentee estates twice as heavily as others.

The reluctance of many planter families to call themselves West Indians and sever more fully their connections with England has always been noticeable. Children were

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[1] Journal of a Lady, p. 92.
[2] Ibid.

traditionally sent abroad to school, which, as an English visitor pointed out in 1774, encouraged more of an English loyalty than an Antiguan one and laid the seeds for absenteeism in the next generation.

The colonists and pioneers in the early days of settlement faced a strange environment uncultivated by man, and in the course of the hard work necessary to clear the primary forest and plant crops and of the constant risk of Carib attack they found a unity in their common hardships and dangers. And they had by necessity a strong interest in the land. By 1700 this attitude had for the most part disappeared; there was no longer a struggle for existence, and a dangerous philosophy of enjoying the fruits of one's labours had taken root. This was not to be seriously shaken until the end of the century when the shadow of Negro emancipation loomed large. But by that time many planters had immersed themselves overdeeply in a quagmire of debts and could not get out. Absenteeism still existed, and Luffman stated in 1830, "To be the manager of the estate of an absentee in this ile I am well satisfied is one of the best situations in it."[1]

Population growth

Despite the evils of absenteeism the eighteenth century was a prosperous one and "witnessed the peak development

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[1]John Luffman, A Brief Account of the Island of Antigua (London, 1789), p. 43.

POPULATION 1678

Based on population breakdown in Oliver.

Scale in Miles
0 1 2 3 4 5

Fig. 27

Total population 4,480

POPULATION 1712

Based on Oliver and early maps.

Fig. 28

Total population 14,692

of these islands under slavery."[1] The total population of Antigua was roughly 12,000 in 1700 (see graph, figure 54), and a little over 40,000 by 1800, a more than threefold increase during the century. The graph illustrates that a peak existed between 1770 and 1800; the population was over 40,000 during this thirty year period, and not again until the census of 1946 was such a figure attained.

The importation of slaves and the natural increase of those on the island was responsible for virtually all of this population increase, the white population having been stabilized at two or three thousand by 1678. The percentage of Negroes in the total population increased from that time on, as the following table shows, until it accounted for all but about ten per cent of the total.

TABLE 2

NEGRO POPULATION
AS PERCENTAGE OF TOTAL POPULATION

1678	48.4
1707	81.6
1774	93.6
1805	89.3
1817	94.1[a]

[a]This percentage includes 2,185 free blacks and coloureds.

Slavery and insurrection

It seems ironic that the planters continued to import slaves although they constantly feared their growing numbers. As early as 1677 the Antigua Association passed a

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[1]Merrill, p. 84.

law which required estate owners to employ one white servant for every ten Negroes, and similar laws appeared in St. Kitts in 1679 and in Jamaica in 1703. A Deficiency Act provided for a fine to a planter if the proportion of his white servants was too low. Such measures were designed by the assemblies to protect the white community against overwhelming slave numbers and the possibility of an insurrection, and yet the planters themselves never strictly complied with the acts. The fines were doubled in 1730 and still appeared to be ineffective. The number of Negro slaves mounted steadily and that of white servants declined just as fast.

This interesting phenomenon of a disregard for the law of white-black proportion existing hand in hand with a fear of Negro numbers is strong evidence that white labourers had become a rare commodity and the planters could do little about it. It also suggests that the suitability of the African Negro for plantation work had been proven, and planters still desired great numbers of them. Let us examine briefly these two points.

The systems of free and indentured white labour in the West Indies were never successful. The initial eagerness of the planters to bring in white labourers probably resulted from the necessity of finding craftsmen, such as shoemakers, blacksmiths and carpenters, coupled with an understandable preference for people of similar background. Such labourers were hired for a term of several years, following which they were discharged, usually with a piece of land under their

ownership. In just criticism of the planters it may be said that they treated their white workers very harshly, so harshly, in fact, that in later years the myth of satisfactory employment in the West Indies had been fully exposed and workers were simply not to be had. Merrill says that the system of indenture "largely disappeared for lack of willing recruits in England by the end of the seventeenth century."[1] Several early writers commented that the white indentured servants were worse off than the Negro slaves. It appears that the planters, by unjust treatment of their own countrymen, forced themselves into a greater dependence upon the Negroes. It may be admitted that in many instances the white labour force was a poor lot, often the refuse of prisons, but this can hardly be regarded as a cause of their ensuing bad treatment; rather we may say that had the West Indies provided better conditions for British immigrant workers, the quality of the workers would have been higher, and the craftsmen originally sought would perhaps have come forward.

Besides the attitude of the planters towards white labour, the attraction of a lengthy bonded employ in the West Indies was not great. Zelinsky puts forward the idea that the failure of the systems of free or indentured labour was quite natural "under the conditions of a rapidly expanding frontier where every settler expected to become wealthy and independent within a few years and could not be confined

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[1]Merrill, p. 56.

to manual labour for more than a minimum period."[1] Those who accepted posts in the West Indies were often attracted away from them by a variety of commercial or adventurous opportunities in other regions, and of these buccaneering offered the strongest lure. Indentured whites contributed little to the Antiguan economy, and this fact may have helped arouse the resentment of their masters.

In short, the indentured labour system was too binding to the individual, and the living and working conditions imposed by the West Indian planters were too strict. Consequently, the supply of indentured labourers dwindled in the eighteenth century.

What of the supply of Negro slaves? It has been said that the initial impetus which brought about the use of African labour was a purely economic one. Indians in the Caribbean proved highly susceptible to European diseases and unsuited to forced labour and the supply declined rapidly. White labour offered no substitute, and the African Negroes remained the most reliable and most abundant labour force.

In addition to the convenience of the African supply there is the added factor that the Negro was well adapted to tropical climates. Although theories which stress the connection between climate and physical development are difficult to prove, Negroes do have certain physical characteristics which render them valuable protection against the direct sun of tropical climates, such as their pigmentation, their

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[1]Zelinsky, p. 157.

constant perspiration from all parts of the body, and a consequent high reflection of sunlight which prevents injury to the nerves and skin. While heat and humidity often prove debilitating to whites from the temperate zone,[1] the Negro is capable of a cheerful existence in hot areas, and this quality made him superior as a field worker in virtually all of Latin America. In a comparison between Negroes in Brazil and indigenous Indians Freyre says of the Negro:

> In addition to their technical and cultural superiority, the Negroes were possessed of something like a biologic and psychic predisposition to life in the tropics. There was their greater fertility in hot regions. Their taste for the sun. Their energy, always fresh and new when in contact with the tropical jungle.[2]

Although the climate of Antigua is less humid and less hot than in rain forest areas of Brazil the comment is still valid. There is also the fact that the African Negroes had a reasonable immunity to malaria which may have influenced their distribution in Latin America.[3]

Negro slaves from Africa were suited to the climate, generally easy to purchase and were fairly cheerful under severe conditions. Antiguan planters continued to import them despite the fear of uprisings because they had become vital to the working of the sugar plantations.

The table below gives figures on slaves brought into Antigua through the eighteenth century. Because of large

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[1]This also applies to South American Indians, according to the naturalist H.W. Bates, quoted in Freyre, p. 232.
[2]Freyre, p. 232.
[3]Zelinsky, pp. 201-02.

gaps of unreported years and missing numbers of slaves bought illicitly the table is meager. Even so it records about 34,000 imported slaves, which is a considerable number.

TABLE 3

SLAVE IMPORTS IN THE EIGHTEENTH CENTURY[a]

Period	No. Slaves
1698-1707	6,750
1720-1729	12,278
c1750	c.2,000/year
1772-1773	1,369
1775-1783	10,045
1797-1799	1,330
Total at least	33,772

[a]These statistics are from Oliver and Deerr. N. Deerr, The History of Sugar (London, 1949-50), II,

The population of Antigua in the last quarter of the century was about 40,000, of which from two to four thousand were whites. The reported imports of slaves amount almost to the total number of slaves, which suggests that there was among the slaves a low natural rate of increase or a high mortality rate.

The price of slaves in the West Indies rose quite steadily. When the Royal African Company received its charter in 1663, which permitted it to supply 3000 slaves a year to the English colonies, a slave sold for £17. After the Dutch wars in the late part of the century the price rose to £25 or 35 per slave.[1] In Antigua the price in 1783

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[1]Parry, p. 97.

was £43 and by 1792 had reached £55 or 60.[1] This indicates how strong the demand for slaves really was in the Caribbean.

The growth of the Negro population was ominous, and when Colonel Samuel Martin was murdered by his own slaves in 1700, there were many uneasy white people on the island. Fortunately, no general insurrection followed, although the people expected it, and the laws governing the treatment of slaves were modified two years later. The fear continued, however, and an undercurrent of unrest became strong among the blacks, ascending to its climax in 1736, when a plot to blow up a large number of white people attending a dance and massacre the other inhabitants of the island was discovered just before its implementation. That the people of Antigua were terrified by the details of this plan is convincingly demonstrated by the ensuing punishments, which were designed to set an everlasting example to the rest of the Negro populace. No less than fifty-eight Negroes were burned alive; six were hung up in chains to starve, and their heads mounted later on poles; four were given torture on the wheel; and 130 were imprisoned.[2] There were no more slave revolts.

Religion

Parry remarks that "the eighteenth century was not a conspicuously religious age," and adds that little effort was made to instruct the slaves in religion.[3] But

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[1]Oliver, I, cxl.
[2]Ibid., c.
[3]Parry, p. 151.

Antigua was perhaps more advanced than other islands in this respect. Moravian missionaries came to Antigua in 1732[1] to preach among the blacks, at a time when "black scurvy" had stricken down many. These were itinerant preachers, but their visit was a sort of preliminary investigation to assess the feeling among both blacks and whites regarding the establishment of permanent missions. This was just four years before the plan of the slave insurrection was discovered, and one wonders whether the planters suspected the missionaries of encouraging the slaves to revolt. At any rate, the missionaries obtained a footing on Antigua later in the century and became very active.

Luffman reported that in 1786 there were Methodist and Moravian meetinghouses on Antigua, and both were very popular.[2] In the year of 1787 the Reverend Thomas Coke visited Antigua and led the Methodist service on Christmas Day, professing to be pleased that the society had 2000 members there, "ladies and gentlemen" and Negroes as well.[3] He continued to Dominica, St. Vincent, St. Kitts and Nevis. A year later he returned to Antigua and remarked in his journal:

> Surely this island is the favourite of Heaven. It is supposed that it contains 7,000 whites and 30,000 blacks: and out of these 2,800 are in our society; and I believe, the Moravians have not fewer than 2,000 in theirs.[4]

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[1]Oliver, I, xcviii.
[2]Luffman, pp. 20 and 109.
[3]Thomas Coke, Extracts of the Journals of the Late Rev. Thomas Coke, Comprising Several Visits to North America and the West Indies (Dublin, 1816), p. 83.
[4]Ibid., p. 116.

Indeed, as he observed, Antigua seemed favoured, for neighbouring St. Kitts counted only 700 Methodists and Statia 258. Besides, the latter had a rather annoying law which prohibited praying of any sort, and the well-intentioned missionary was later expelled from the island. That was bad enough, but the sloop which he hired for the passage to St. Kitts was possessed of a drunk crew; the boat suffered some damage in a collision not long after departing and was soon drifting in the open sea with no one at the tiller. The fortitude of the men of the cloth is apparent:

> There was no one to turn the sloop about, till with great difficulty my friends, the Missionaires, unacquainted with such business, brought it round: and after running against another ship, by which the rudder was broke, and the stern much damaged: and after bribing the captain with ten dollars . . . we were landed again on the island of St. Eustatius.[1]

The Reverend acknowledged the Divine assistance which he had received in the completion of such a hazardous voyage and pressed on to St. Kitts, Nevis, Saba, Tortola, St. Croix and finally Jamaica. He made two further tours of the West Indies, in 1790 and 1792, and during the last made an estimate of the number of members in the society. His figures show very clearly that Antigua was the most secure stronghold of Methodism in all the British islands, having one-third of the total number.

At the same time, according to Oliver, the United Brethren had settlements at St. Johns, Old Road and Falmouth.

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[1]Coke, p. 119.

A breakdown of the strength of their Negro congregations follows that of the Methodists.

TABLE 4

METHODIST MEMBERS IN BRITISH ISLANDS IN 1792[a]

Island	Whites	Coloureds	Blacks	Totals
Antigua	36	105	2279	2420
Barbados	34	7	10	51
Grenada	0	0	30[b]	30
St. Vincent	4	0	450[b]	454
Dominica	0	0	20[b]	20
St. Kitts	32	0	1522[b]	1554
Nevis	0	0	394[b]	394
Montserrat	0	0	12[c]	12
Tortola	6	0	1400[b]	1406
Jamaica	24	46	170	240
Total Membership				6581

[a]Coke, p. 214.
[b]This number includes Coloureds.
[c]This number includes Whites, Coloureds and Blacks.

TABLE 5

UNITED BRETHREN MEMBERS IN ANTIGUA IN 1799[a]

Baptized	8,596
Candidates	969
New people	1,540
Total	11,105

[a]Oliver, I, cxlii.

The century closed with Methodists, Moravians and United Brethren active in bringing to the Negroes the comfort of religious expression. This work was very important in the first quarter of the next century, the years leading

up to emancipation, when they began setting up schools for the Negro children. Their achievements were widely praised.

Permanent churches of Anglican faith were established during the early 1700's or slightly before.[1] There were five churches on Antigua by 1705, and seven are shown on Moll's map of about 1732, on Bowen's map of 1752 and Heredes' map of 1759. These churches were scattered around the island, with the intention of serving each of the six parishes.[2] There were slight changes through the century, but the number stayed the same until Luffman's map of 1787 showed only six, Belfast Chapel having disappeared. After the church of St. Mary's appears near Old Road on Jefferys' 1768 map, St. Mary's parish retains two churches, the other being the Valley Church in Bermudian Valley Division.

Government

The six parishes were divided into a total of fifteen divisions, each of which was represented by one man in the Assembly. There was also a council of fifteen members, all appointed by the Governor and approved by the King. The assembly met infrequently, but appears to have been stirred into some form of conscience-stricken activity following the notoriously bad governorships of Parke and Douglas. Daniel Parke's story is fascinating:

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[1]In 1676 there was one church, at Falmouth. Oliver, I, liii.

[2]The island was divided into five parishes in 1681; a sixth seems to have been designed later, unless Oliver was wrong about the original number. Oliver, I, lxx.

> This truly remarkable man was a Virginian who had committed a murder at a gambling-table, deserted his wife, fled to England, purchased an estate, got himself elected to, and was promptly expelled from Parliament for bribery. He fled to Holland, pursued by a captain of the Queen's Guard, whose wife he had dishonoured, and there volunteered, under the Duke of Marlborough, as aide-de-camp. The duke was almost immediately obliged to dishonorably discharge the rascal from the army . . . dispatched him to England to announce the gaining of that famous victory [Blenheim] to Queen Anne.
>
> To relieve herself in turn of the presence of the busy villain, the Queen . . . appointed this precious scoundrel to the Governorship of Antigua, where he lost no time in provoking a riot, in which he was killed by a mob, who, exasperated by his crimes, literally tore him to pieces in the street.[1]

After Parke's death Douglas governed very nearly as badly as his predecessor and was later imprisoned for five years. The assembly, which had been threatened and variously mistreated by Parke, seems to have found new strength by 1727, for Oliver records that the meetings of this body "having always been held in taverns, it is now thought advisable that a special meeting house shall be treated for."[2]

Roads and towns

Sir William Young, on a visit to Antigua in 1792, remarked, "The roads are excellent, & everything speaking the civilisation of art, & toil of man."[3] It was true that the island presented a noble aspect, if the distressing effects of periodic droughts were not considered; man, at least, had "generated" something in this small island.

Maps of this century show a large number of plantations

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[1]Paton, p. 76.
[2]Oliver, p. xciii.
[3]Young, p. 282.

scattered quite uniformly over the island, served by a dense system of roads. Luffman's map (1787) retains roughly the same pattern as does that of Moll (1732), although the latter pictures a radial road system with its hub at Freemans in the centre of the island, while Luffman correctly shows St. Johns as the true focal point on the road network, as it always has been. One might argue that in Moll's time Freemans was a major centre, that St. Johns captured this function from it, but nothing else suggests this, and it is apparent that Luffman's map is a far more detailed and more accurate representation than is Moll's. By Luffman's time the road system had reached its peak; very few changes have occurred in the intervening two and three-quarters centuries. If anything, there have been some subtractions, as some of the old access roads have deteriorated into mere paths. The main arterial highways have of course been widened and even paved in some cases.

The fact that the road system in the eighteenth century was more elaborate than it is today is indicative of the great changes which have occurred in the pattern of settlement. During the days of slavery virtually all the population lived on estates, and apart from two or three ports there was little development of urban centres (see figure 28). Communication necessarily depended upon a complex system of roads linking all the scattered plantations together. In the decades following emancipation the population began concentrating in villages, laying the foundation for the

present day road network.

The eighteenth century was not characterized by the growth of villages and towns, but the few settlements located on navigable bays did increase in size by virtue of their great importance in trade. St. Johns and Falmouth were bustling centres of trade,[1] both being possessed of suitable harbours (see figures 18 and 11). Parham was growing as the third commercial port, helping to serve as an additional outlet for the flat northern section of the island.

The appearance of Falmouth today does not readily betray the importance which this town had a few centuries ago. It is a small, strung-out town with very few houses in view, and the paved road from St. Johns there becomes a rock-studded dirt road which is soon impassable to vehicles other than tanks or possibly rickshas. A few small sloops may be at anchor offshore. The new school is glaringly apparent. But this harbour was a busy trading port in the 1700's, for the shape of the bay and the height of the surrounding hills gave splendid protection for anchored craft. It was a rival of St. Johns.

An additional impetus was given Falmouth by its proximity to English Harbour, from which it is separated by only a narrow isthmus. English Harbour was used as a naval port in those times because of its natural protection from hurricanes or enemy ships, and Falmouth was its commercial complement.

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[1]St. Johns had 1800 huts and houses in 1787. Luffman, p. 20.

Newspapers

Among cultural achievements we might mention the beginnings of a newspaper business. Benjamin Franklin sent a man by the name of Thomas Smith to set up a press in Antigua in 1748. The machine was duly established near the waterfront in St. Johns, where the Antigua Gazette Weekly was produced for the next three years, and where a volume of poems was printed in 1749. Smith, in Franklin's words, then "grew careless and got to sitting up late in Taverns,"[1] and the Gazette ground to a stop, to be started again by Benjamin Mecom, Franklin's brother-in-law, who ran it until 1756. Its history beyond this date is not clear, but in Luffman's time there were three weekly newspapers in operation, including a revived Gazette, the Antigua Chronicle and the Antigua Journal.

Defence

Antigua was very fortunate in being little molested by foreign troops, and we may credit its position on the windward side of the island arc as a significant; St. Kitts and Nevis, on the other hand, suffered considerably more. Antigua did fall to the French once, in 1666, when de la Barre devastated much of the island, but the occupation lasted little more than a week.

Nevertheless defence was a stormy issue, even as it is today in Canada, and money was lavished on the construction

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[1]Wilberforce Eames, The Antigua Press and Benjamin Mecom, 1748-1765 (Worcester, Mass.: The Davis Press, 1929.)

of fortifications and the maintenance of garrisons. Governor Keynall in 1656 had written to England requesting more colonists, more money, more servants, and also a garrison of soldiers, better to exploit and protect the valuable resources of the island.[1] His plea for a permanent garrison was the oft-heard cry of the West Indian planters for more adequate defence measures, because from the earliest days of settlement the merchant-backers or proprietors of the islands had been obliged to bear the expense of defending these territories and had generally neglected this duty. The planters were reluctant to assume the cost, in view of the tax which they were compelled to pay on their agricultural export.[2]

The capture of Antigua in 1666 by the French pointed out the need for a more responsible attitude towards defence, and in 1672 it was decided to build forts at St. Johns and Falmouth, with the planters supplying a proportion of their slaves for the actual construction. Charles Wheeler, then Governor of the Leeward Islands, made the observation that English Harbour could be joined to Falmouth Harbour by excavation. A letter by Stapleton in 1676 reported forts in existence at St. Johns, Falmouth and Carlisle Road,[3] and in the same year Colonel Warner recommended that a general garrison be placed on Antigua, by virtue of its size, good

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[1]Oliver, I, xxvii.

[2]A proportion of the cotton and tobacco crops was paid until 1668, when Lord Willoughby imposed a 4½% duty on the produce of the island.

[3]Oliver, I, liii.

harbours, wild game and fish, proximity of Barbuda for stock raising, and its windward location.[1] It is important to realize that at this date the island had to be defended not only against the French (against whom the English warred from 1688 to 1697 and from 1702 to 1713) but also against the Caribs, who were still a strong threat. A militia of local men was in existence, and a nightly guard was posted to warn against Indian attack. Even as late as 1787 a night guard of fifty is reported by Luffman.[2]

Monk's Hill, overlooking Falmouth Harbour, was a strategic position in the southern part of the island because of the presence of Falmouth and English Harbours there, and also because Carib attacks generally came from the islands to the south. A fort was begun on this lofty peak in 1688. In 1702 all local men were conscripted into the Antigua militia, and by 1705 there were three militia regiments, one troop of cavalry, three Queen's companies and 92 cannon on the island.[3] And about this time the naval ships began to make use of English Harbour, although facilities were still rudimentary.

Forts or gun emplacements existed in other parts of the island, and there was a total of twenty by 1704.[4] These were continually improved and enlarged in succeeding years,

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[1] Ibid.
[2] Luffman, p. 130.
[3] Oliver, I, lxxv.
[4] Sir Kenneth Blackburne, The Romance of English Harbour (2d ed. rev.; London: Tollit & Harvey Ltd., 1956), p. 8.

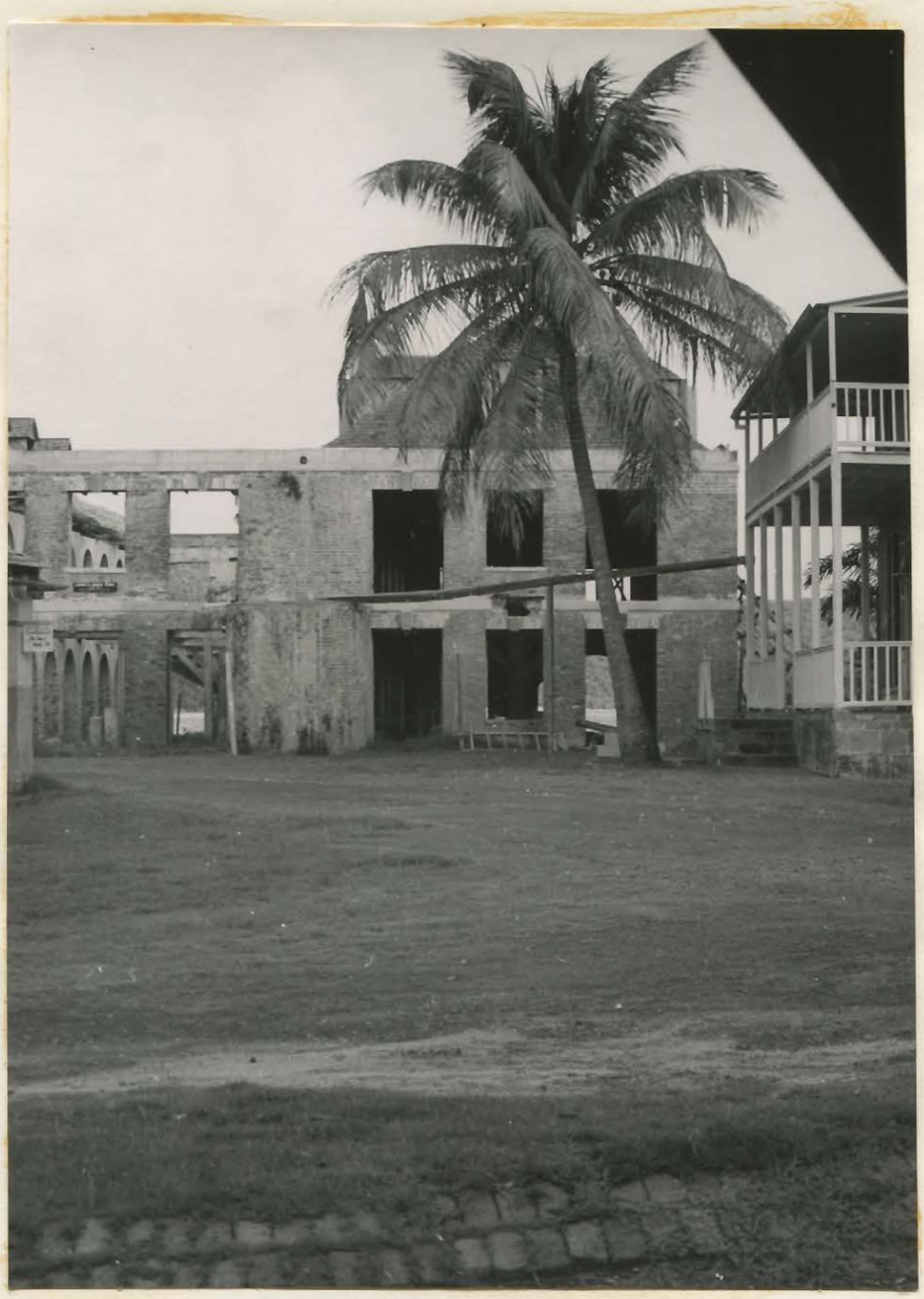

Fig. 29.--Copper and Lumber Store, English Harbour. This well sheltered harbour on the south coast was one of Antigua's fortified positions and a useful naval base for Royal Navy ships in the eighteenth and nineteenth centuries. Captain Horatio Nelson was stationed here from 1784 to 1787.

especially in the vicinity of English Harbour, where a busy naval base was in operation by 1723 (see figures 29, 50 and 51). French privateers harassed the shipping routes around mid-century, reputedly taking one hundred ships in a ten month period prior to 1746, and the residents of Antigua demanded better naval protection. The French part in the American War of Indépendence again encouraged additional defence measures, but after this conflict ended, defence spending on forts declined, although garrisons remained. In 1803 a force of over 1000 men was stationed at English Harbour for its defence along.

Trade

The characteristics of the trade of the sugar islands were:

1) Distances to markets and from sources of supply were very great.

2) The long supply lines were susceptible to attack by warships or privateers.

3) The islands were far from being self-sufficient in foodstuffs or other materials.

4) The trade to and from British islands was restricted by the mercantilist navigation laws of the seventeenth century.

5) The official trade restrictions were commonly broken by the island residents; smuggling was popular.

Antigua in the eighteenth century depended on the

sale of its sugar produce in England as surely as a crippled man depends on his crutches. Yet the distance to market was not only great (over four thousand miles) but also beset with the dangers of interference by enemy warships or privateers. Nevertheless, this long and insecure lifeline continued to bring profits to Antigua planters all through the century. Other exports included rum and molasses, both to England and North America.

As in the case of the sugar export, the import trade was characterized by very long supply lines, a decided inconvenience. The important items were slaves from Africa; cloth, tools and weapons from England; beef, butter and cloth from Ireland; and lumber, corn, bread, flour and fish from North America.

This trade was confined to British ships by the Navigation Laws, unpopular in the West Indies, where the planters were accustomed to buying from foreign ships, the Dutch in particular. The Dutch were well-equipped to sell European goods and African slaves in the Antilles, having trade depots on certain islands, including St. Eustatius, which is not far from Antigua. Antigua planters did not hesitate to carry on illicit trade with Dutch ships if it was convenient or profitable to do so; at no time did they permit their loyalty to England to interfere too far with their commercial enterprises.

This was usually tolerated by the island authorities, and they, in fact, often participated in the smuggling to

their own profit. The naval commanders as well were quite willing to let trade with foreigners flourish if it seemed to benefit the inhabitants, especially if the merchants of the island let money argue for them. Oliver declares that "bribery and corruption pervaded all classes in a lesser or greater degree,"[1] and explains that bribery was usually necessary to induce the naval ships to do any active patrolling against privateers. When the American War of Independence broke out in 1776, the colonies were prohibited to trade with the revolutionaries, a measure repugnant to both the Americans and the British West Indians. This was soon circumvented by using the Dutch as middlemen and even by outright trading with American ships flying false British colours, upholding their bold trade in St. Johns harbour on the irrelevant claim of the British registry of their ships. As usual, such things were overlooked, because the American trade was extremely important to Antigua. But in 1784 Horatio Nelson arrived at English Harbour, and as soon as the details of the illicit trade were known to him he unhesitatingly seized some of the American ships and did his best to cease any illegal trading activities; his strict attitude offended all Antiguans, even the Governor.

The trade with the United States was still prohibited in 1799, but a special dispensation was made by the Antigua Council. In view of the "large crop this year and the scarcity of British shipping, President Thomson has allowed

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[1]Oliver, p. lxxxv.

six months' trade with Americans so that our colonists may barter sugar for lumber and provisions."[1] The reaction of the home government was firm: "The Secretary of State writes to the President to at once stop trade with the Americans, and severely censures him."[2]

Antiguans generally appreciated the convenience of wartime, or should we say that because there were so many war years in the eighteenth century they simply learned how best to enjoy them. News arrived in 1736 of a probable war against France, and Luffman reported, "This news has put the people here into spirits, as being likely to make money circulate."[3] There was also the feeling that a war would provide some opportunity for military forces to conquer the French islands and destroy their sugar production. Bitter voices complained when, during the Seven Years' War, the English forces conquered Guadeloupe and passed up the chance of burning the cane fields and buildings. The English actually permitted Guadeloupe sugar to be marketed in London during the period of occupation, which caused a drop in sugar prices and thus rebounded on the planters in the British islands. But, in general, "war, or the constant possibility of war, in the middle eighteenth century was to the advantage of the British West Indies."[4]

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[1] Ibid., p. cxliii.
[2] Ibid.
[3] Luffman, p. 108.
[4] Parry, p. 113.

Summary

The eighteenth century in the West Indies was the age of sugar, the peak of prosperity for the plantation system, the heyday of wealth and monoculture. It was characterized by frequent wars, many privateering episodes and a continuous smuggling activity in the sugar islands. Antigua reached the peak of its population curve after mid-century and built a network of roads to which little has been added since. Towards the end of the century it became apparent that the days of slavery were numbered, not because of economic factors but because the real nature of the system had been made known to the people of Europe, and their minds and hearts stirred into a vigourous disapproval of this human bondage. In Antigua the coming of emancipation was prepared for by the diligent work of various missionary groups.

V. THE NINETEENTH CENTURY

Leading up to emancipation

Slavery was one of those questions on which both sides had loud and justifiable arguments. It could be said that the purchase, transportation and sale of African Negroes, and their employment as slaves in the West Indies was inhuman, and by 1800 the English people strongly objected to it on the moral argument alone. But it could also be affirmed that the Negroes were slaves even in Africa, that their material comfort and spiritual welfare were better on the sugar plantations, and that they were absolutely essential to the cultivation of sugar cane and the making of sugar.

It was, however, only a matter of time before slavery went out, because it was offending and embarrassing the public to an increasing extent, under the skilful management of the pioneers of the abolitionist movement--such men as Clarkson, Sharp, Ramsay and Wilberforce. The trouble started over certain incidents in England itself, where West Indian absentee owners kept more than 10,000 slaves and frequently cared badly for them. In 1772 all these slaves were legally liberated by the Chief Justice Lord Mansfield, who declared that there was no law in existence permitting the ownership of slaves.[1] Opposition to slavery became stronger after

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[1]Parry, p. 178.

Fig. 30.--Johnson's map of 1830.

this encouraging event. The movement was carried into political circles by Fox and Pitt, and a pitched battle was initiated against the strong West Indian interests. The outcome was a foregone conclusion to men of reason on either side, but the battle was hotly contested because the planters were convinced that the end of slavery would mean the end of sugar; they could not visualize the continuation of plantation agriculture on a free labour basis.

The planting interest often criticized the opposition because of its ignorance of local conditions in the West Indies. Bryan Edwards, at a conference of the assembly and council of Jamaica to discuss in 1789 the abolition bill, acknowledged that "the Propositions . . . are respectable, as coming from a man whose virtues add dignity, and whose elegance gives lustre to the English Senate," but ironically concluded his address with, "Unhappily, Sir, Mr. Wilberforce possesses no personal acquaintance with the Sugar-Islands."[1] On the other hand, the number of voyagers to the West Indies in the first half of the nineteenth century indicates the curiosity and interest of the people at home regarding the actual state of affairs in the islands, both before and after the emancipation in 1834. And of the ten greatest figures in the abolitionist cause in England "four of these--

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[1]Bryan Edwards, "A Speech Delivered at a Free Conference between the Honourable the Council and Assembly of Jamaica, . . . November 1789 . . . on the Subject of Mr. Wilberforce's Proposition in the House of Commons concerning the Slave Trade," included in his volume Poems Written Chiefly in the West Indies, 1792 (Kingston, Jamaica, 1792), p. 11

Ramsay as beneficed clergyman in St. Kitts, Newton as a slave-dealer before he took orders, Macaulay as overseer in Jamaica, and Stephen as barrister in St. Kitts--had first-hand knowledge and could speak as with authority."[1]

The whole business of slavery was so vital to the planters that, in some ways, they did not apply much reason to their arguments; again it was fear which affected their attitudes, just as fear of slave uprisings had produced excessive severity in their disciplinary measures. This time it was a fear of losing their power over the Negroes, a fear of not being able to afford or even attract labour, a fear of complete economic ruin. Sometimes English visitors saw the problem in a more reasonable light: Luffman received the news, during his visit in 1786-88, that the English Parliament was considering improvements in the slave trade and perhaps complete abolition of it, and he remarked that if the immigration of slaves were cut off the owners on the island might take greater pains to treat their slaves well, to ensure their continuity.

The act abolishing the English slave trade came into effect the first day of 1808. Other nations followed suit, not to appear less civilized: the United States in 1808, Sweden in 1813, Holland in 1814, France in 1818 and Spain in 1820. Denmark had abolished the trade in 1804. Enforcement of the English act was strengthened in 1827 by making slave

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[1]Noel Deerr, The History of Sugar (London: Chapman & Hall Ltd., 1949-50), II, 301.

trading by English subjects punishable by death, while France, Spain and the United States continued to tolerate active slave trading until much later despite their laws. The final legislation was the Emancipation Act which was passed in 1833, giving freedom to all British-held slaves.

Emancipation

Freedom immediate and unqualified sounded dangerous, and a system of apprenticeship was therefore recommended to the islands, whereby Negroes would continue work without pay for their former owners about forty hours a week, being paid for work beyond this amount, and having the privilege of buying their freedom, if they could, before the expiration of the term of apprenticeship, which was not more than six years. Emancipation did not mean freedom for the Negroes at once; they were to be bound to their owners for several years more in order to make the change less drastic for everyone concerned.

But the separate islands were permitted scope within the plan; Antigua unflinchingly refused the apprenticeship scheme entirely and granted immediate freedom to all Negroes.

The reasons for this move were probably three. In the first place, it seems probable that the planters were not in favour of the apprenticeship term because of the reaction it might have on the slaves. There had been trouble enough in other islands, where pre-emancipation rumours had made the slaves restless and anxious, and actual outbreaks had

occurred in Guiana, Barbados, Jamaica and Martinique, not to mention Haiti, which had fairly exploded at the chance of acquiring slave freedom during the French Revolution. The apprenticeship system was certain to be unpopular with the slaves, and the Antiguan whites may simply have wished to avoid displeasing them. As it turned out, the Negroes of St. Kitts, where apprenticeship was adopted, refused to go to work under the system and there was much trouble.

Secondly, the decision may have been partially due to the situation regarding the uncleared land on Antigua. In Jamaica, where there were large blocks of uncultivated land, the Cockpit Country and the Blue Mountains, for instance, there was a great temptation for freed slaves to drift away from the plantations and continue on their own as small subsistence farmers.[1] In that island it was hoped that the obligations laid down in the apprenticeship system would take care of labour requirements and keep the slaves on the plantations. But, as the size of Antigua was much less and the relief more moderate, almost all the land was taken up by estates, and there was little opportunity for Negroes to withdraw from the plantations and establish their own villages and plots. Other than plantation work there was no so source of employment for unskilled labourers, and besides the slave quarters provided on the estates there were few places to live. The whites on Antigua realized that the

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[1]The same was true in British Guiana.

freed slaves, lacking opportunities to retreat into subsistence farming, would willingly continue to work on the estates after emancipation. There was therefore no need to adopt the plan of enforced apprenticeship.

Thirdly, it was recognized that the Antigua natives were fairly well-prepared for freedom and did not require a breaking-in period. Hovey, who was in the islands at the time of emancipation, reported that there was a feeling "that the slaves of Antigua were, at that time, as well prepared for freedom as those on most of the other islands would be in 1840, when the act provided for their entire emancipation."[1]

Work of the missionaries

That the slaves of Antigua were better able to cope with immediate freedom is a credit to the active missionary work, which started long before emancipation. It will be remembered that before 1800 the Methodists were claiming 2,420 members on Antigua, the Moravians over 2,000 and the United Brethren 8,596 baptized. Although the white planters initially considered the missionaries dangerous elements and feared their influence among the slaves, it had become apparent that they were not inciting the slaves to revolt, and their religious work among the Negroes came to be accepted more readily in Antigua than on any other island. This attitude bore ripe fruit, and it was the missionaries who

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[1]Sylvester Hovey, Letters from the West Indies: Relating Especially to the Danish Island of St. Croix and to the British Islands Antigua, Barbadoes and Jamaica (New York, 1838), p. 54.

brought not only religion but education as well to the Negroes.

The white people of Antigua mostly belonged to the Church of England, as did some blacks, but this church never went out to help the Negroes. The Anglicans had a church and a rector in each parish and presumably were well attended, but it was the mission societies which exhibited energy and purpose in bringing religion into the daily life of the coloured folk. At the time of emancipation the Wesleyans (Methodists) were running Sunday schools and boasted over 8,000 members, while the United Brethren owned five establishments, employed twenty-two missionaries and had over 5,000 members.[1] Gurney reported that in 1840 the Methodists had about 3,000 members and the Moravians about 12,000.[2]

Hovey found the population adequately served by twenty-six ordained ministers, eighteen regular churches and several temporary ones, and made the observation that "it was the uniform testimony of people in Antigua, that religion had been the most efficient cause in preparing the way for freedom."[3]

The effect of emancipation

In some ways emancipation brought about improvements in the sugar culture. Coleridge noticed much idleness among

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[1] Ibid., p. 81.

[2] J.J. Gurney, A Winter in the West Indies, Described in Familiar Letters to Henry Clay of Kentucky (London, 1841), p. 59.

[3] Hovey, p. 70.

the Negroes a few years before 1834, and there are indications that the planters had been paying too much attention to the mere number of slaves without giving sufficient thought to time-saving methods and equipment. From figures given by Johnson in 1830[1] the average size of estates appears to have been 365 acres and the average number of slaves per estate was 173. Gurney suggested that the plantations before emancipation had been greatly overstocked with slaves--that from one-third to one-half of their labour forces had been dead weight.[2] Putting labour on a wage basis seemed to make it more efficient by creating incentive to earn cash.[3] The Negroes were dependent on the money they earned and realized that a real effort would have to be made to satisfy their employers. In some cases Negroes were ejected from estates for unsatisfactory work, and idleness and vagrancy were made punishable offences. A Parliamentary committee studied the effects of emancipation on the sugar industry in 1842 and reported that the "character and condition" of the Negro population had improved greatly, that there was a good sense of property value, an awareness of social responsibilities, and a greater interest in religion and education.[4]

It was anticipated that there might be an inconvenient

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[1]J. Johnson, An Historical and Descriptive Account of Antigua (London, 1830), 4th leaf.

[2]Gurney, pp. 57-8.

[3]Sturge and Harvey in 1836 also stressed the good effects of freedom and wage earning on the efficiency and character of the Negroes.

[4]Deerr, II, 362-63, quoting Parliamentary Papers, 1942, ix.

amount of population movement after emancipation and a lot of shifting from one employer to another. Accordingly, it was requested that everyone remain in his present job and residence for a period of a year. After the passage of one year anyone who wished to change jobs could do so, but in order to control the probable rush for easy jobs such as those of porter and pedlar, the government made these subject to the granting of licences. The rate for field labour was fixed by agreement among the planters, and it seems to have been tenpence a day in 1834[1] and from six- to ninepence a day in 1841.[2] If approval was given by a magistrate a deduction could be made for idleness on the job. Besides this basic wage there was also the incentive of job-work, which could add considerably to a worker's income. As Hovey pointed out, "Skill and industry are beginning to be appreciated."[3]

There were initial protestations by the Negroes over the level of the wage rate and probably with reason. The planters could only guess as to how much they could afford to pay, and it was a trial and error business. But if there was any error it was probably on the side of the planters, because, while the sugar plantations did well, the Negroes found their earnings providing a very small margin over mere existence. For some the margin did not exist, and organizations

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[1]Hovey, p. 63.
[2]Gurney, p. 53.
[3]Hovey, p. 65.

like the Daily Meal Society and the Friendly Society were kept busy caring for the poor, the old and the sick.

The visitors to Antigua in the crucial period just after emancipation seem to have made very casual inspections of the position of the Negroes. They usually described the effect on the sugar plantations and placed insufficient emphasis on the adjustment which the Negroes had made. The general opinion was, however, that the change had worked out well, and that the Negroes had taken easily to wage earning jobs, although they were still living on a low scale.

West Indian planters had feared that a difficult labour problem would follow emancipation--that labour would be both expensive and in short supply. As we have seen, the Antiguan whites counted on the opposite, and, after the slaves were given freedom they found no trouble in working their estates. There were willing workers and the price was accepted by them, if grudgingly. The planters had labour against the wall, and the plantations were able to continue without any substantial increase in labour costs. The Parliamentary Committee of 1848 interviewed a Mr. Owen Pell of Antigua, who stated that his estate suffered nothing by emancipation, either in terms of production or operating cost.[1] The estimates by Sturge and Harvey also support this contention.

Neither was there any critical labour shortage, for,

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[1]Quoted in Deerr, II, 368.

as Deerr describes it, "In Barbados, Antigua and St. Kitts the emancipated African had to choose between work and starvation."[1] Also, the owners had received compensation from the government for the loss of their slaves, and this was used to clear away mortgages and pay old debts.[2] The planters emerged from emancipation less encumbered by financial obligations and free at last of the haunting fear of slave uprisings. These factors, coupled with the increased efficiency of labour, pushed land values up and gave the sugar economy a reassuring boost. Several estates which had been abandoned during the slavery days were brought back into sugar cultivation, including Potter's, Dunning's, Jennings', Patterson's, Tranquil Vale and Hill House.[3] Agricultural methods were improved by the introduction of the Bourbon variety of sugar cane, which increased yields per acre; the substitution of the horse-drawn plough for digging sticks and hoes; and the introduction of such items as carts and weeding machines.[4] Hovey described the reaction of the Negroes to some of these implements as being unfavourable; when given wheelbarrows they loaded them and then carried them away on their heads.

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[1]Deerr, II, 378.

[2]On Antigua the total compensation for slaves was £425,549 or an average of £14.5 per slave (Deerr, II, 306). This was the lowest average recorded except for the Virgin Islands, the Bahamas and Bermuda.

[3]Gurney, pp. 52-3.

[4]Merrill mentions the use of steam ploughs in Antigua after 1834 and reports two estates on Nevis using steam-driven grinding mills by 1825 (Merrill, pp. 92-3).

Antigua definitely showed a healthy adjustment to the new status of labour. This was in contrast to many of the other West Indian colonies, particularly the large ones like Jamaica and British Guiana, where labour problems caused high costs and low production of sugar. Although the years immediately following 1834 produced no labour shortage in Antigua, there is an indication that a problem did arise after a decade or so of the free labour system. Between the years 1846 and 1864 a total of 2,119 Madeiran workers came to the island.[1]

The transition from slavery to freedom occurred in a remarkably smooth manner, and there is no indication that the agricultural production suffered from the change. Visitors to Antigua in the post-emancipation period (such as Hovey, Gurney, Sturge and Harvey) were full of admiration for the state of affairs, although some were too ready to credit everything good to the granting of freedom. Deerr cautions us that the impressive statistics given for production on Antigua immediately after 1834 (for instance, those of Gurney) must not be necessarily considered the marvellous result of emancipation but rather as the reflection of a run of climatically favourable years. This is a valid criticism of Gurney's interpretation of the figures: the rainfall of the island is known to be extremely variable, and the direct relationship between rainfall and sugar production has been proved.

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[1]Deerr, II., 385.

The decline of sugar

The remainder of the century treated the sugar economy of the West Indies badly. The situation was worst in Jamaica and British Guiana, where an acute labour shortage proved a serious disability, and one, incidentally, which encouraged immediately after emancipation a large-scale immigration from Madeira, Africa, India, Indonesia and China as well as from the smaller West Indian islands.[1] But there were a number of other factors besides the shortage of labour, including increased shipping costs to England, the restriction of refining processes in the colonies, and a change in the marketing system which put the planters on a cash basis instead of their traditional credit system. Cash, in fact, became scarce in the islands, and, to make matters worse, thirteen West Indian banks in London and some in the West Indies went bankrupt in 1847.[2]

Underlying these rather superficial causes two basic factors were outstanding in the decline of the sugar islands in the nineteenth century. One was the alteration from a mercantilist thinking to an advocation of free trade, stimulated by the writings of Adam Smith, a reversal of the philosophy which prompted such measures as the Navigation Acts in the 1660's. Free trade in the seventeenth and eighteenth centuries would have been welcomed by the colonists, as it would have permitted legal trade with the

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[1]Witness the drop in Antigua's population curve from 1800 on (figure 54).

[2]Parry, p. 198.

Fig. 31.--Abandoned sugar mill. The towers of old windmills and the tall brick chimneys of the steam mills which replaced them late in the nineteenth century are a familiar sight on Antigua.

Fig. 32.--Old estate house. This house was part of High Point Estate, which was purchased about a half century ago by Mr. MacDonald, its present owner. The estate has been broken up and the house remains as a private residence, surrounded by the land allotted to the United States for defence purposes and the tracking of guided missiles.

United States and with foreign traders, such as the Dutch. But, coming later, the laissez-faire spirit was as harmful to the sugar islands as the Navigation Acts had been much earlier. Free trade meant a casting aside of colonial preferential duties and an acceptance of foreign grown sugar in England. It drew the economic supports out from under the West Indian sugar plantations, because without commercial protection they could not survive the competition of the nineteenth century sugar producers. Preferential duties had not been so significant in the early days, when the West Indian islands and Brazil were pioneer producers of a newly popular household commodity, but they were vital in the 1800's, with the rise of sugar production in other parts of the tropics.

In 1840 a complete equalization of duties on foreign and colonial sugar was proposed in the House of Commons, and in the next six years a series of famous debates brought the sugar question to the fore. The first reduction on foreign non-slave sugar occurred in 1844, while colonial sugar retained the same duty as before. In 1846, with the repeal of the Corn Laws, the protection on sugar fell also. An enactment provided for the gradual reduction of duties until a point of equalization was reached, and by July, 1854, no distinction between colonial and foreign sugar remained. Increases in the duties after 1854 were temporary measures to help pay Crimean War expenses, but the free trade policy

was resumed in 1864. By 1874 there was no longer any duty on incoming sugar, and this state of affairs remained until 1901.

The second fundamental cause of economic distress in the sugar islands was the competition provided by foreign growers. Sugar was expensively produced in the British West Indies, and its cost in England was high. Other areas found that with more modern methods and equipment and with bigger plantation units they could produce a large amount of high quality sugar for a lower price. Cuba and Brazil became heavy producers; there was also the southern part of the United States, the island of Mauritius, and Hawaii. These territories were by 1900 all producing roughly from 100,000 to 300,000 tons of sugar a year, as contrasted with Antigua's 7,000.

TABLE 6

SUGAR PRODUCTION IN THE NINETEENTH CENTURY (IN TONS)[a]

	1800	1850	1900
Brazil	20,400 (1806)	138,000 (1853)	320,000
Cuba	28,419	223,145	283,651
Mauritius	477 (1812)	55,163	175,025
Louisiana	17,055 (1823)	120,168	303,648
Philippines	--	28,700	113,497
Peru	--	--	112,000
Argentina	--	30 (1845)	117,209
Hawaiian Is.	2 (1837)	334	258,000
Queensland	--	--	92,554
Antigua	5,882	6,193	7,622

[a]Deerr, I (extracted from various tables).

In addition to growing foreign sources of cane sugar, a considerable measure of competition was provided the West Indian planters by sugar produced from beets in Europe. The possibility of extracting sugar from this plant had been recognized by Marggraf, who successfully obtained sugar experimentally in 1747. This discovery was given practical importance by his pupil Achard, who was encouraged by the Prussian court with the granting of a small factory and various financial gifts. Countless others contributed to the scientific advance in the beginning of the nineteenth century, and a great stimulus was provided in France by Napoleon, who saw in beet sugar a replacement for colonial cane sugar and a means of making France self-sufficient during the days of his Berlin and Milan decrees. The industry was continued by Crespel-Dellisse after 1814; there were eight factories in France by 1820 and over one hundred by 1825.[1]

Sugar beet cultivation spread through Europe and accounted for an increasingly greater percentage of the total sugar supply. In 1840 cane sugar provided 93% of the total, but in 1880 it accounted for only 50.2%, illustrating the rapid and significant rise of beet sugar. The following table shows the percentages for additional years.

It seems that the labour shortage on West Indian islands and the inability of planters to pay off the financial obligations of slavery days were unimportant on Antigua. Labour was plentiful after emancipation and estate owners

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[1]Deerr, II, 479.

were able to invest more capital in their land by the addition of more modern implements, vehicles and machinery. Abandoned estates were revived and land values increased. But the economy eventually did suffer at the hands of the external economic factors--the growth of foreign competition and the reduction of preferential treatment in England. The great increase in world sugar supply, from both cane and beet, brought about drastic price drops, and by mid-century the Antigua sugar industry was in trouble. As early as 1841 the planters had sent a petition to the House of Commons complaining that they were suffering from the reduction of English duties on sugar produced in foreign lands (which were still utilizing slave labour) and from the competition of East Indian sugar. It is not hard to sympathize with their indignation at England's buying slave-grown sugar from foreign territories after prohibiting slavery in her own.[1]

TABLE 7

WORLD SUGAR PRODUCTION[a]

Year	Cane	Beet	Percentage from Cane
1840	788,000	48,198	93.0
1850	1,043,000	159,435	86.5
1860	1,376,000	351,602	79.7
1870	1,662,000	939,096	64.0
1880	1,883,000	1,857,210	50.2
1890	2,597,000	3,679,800	41.2
1900	5,252,987	6,005,868	46.6

[a]Deerr, II, 490-91 (extracts from his table).

[1]A detailed account of English duties on sugar is given in Deerr, II.

Some writers attribute the decline of the sugar islands at this time to the abolition of slavery. In the case of Antigua this was distinctly not so. But whatever the reasons the slump continued, and estates began again to be abandoned. Johnson listed 155 estates on Antigua in 1830;[1] Eves stated in 1887 that there were 102.[2] And whereas the area included in estates in 1830 was 59,229 acres (just 10,000 less than the total acreage of the island), it had shrunk to 20,000 by 1883, if Eves' figures are correct. This would mean that the average size of estates had dropped from 365 to 196 acres, as planters probably found the financial burden of large estates too much in the declining sugar market.

Despite the introduction of steam ploughs and steam-driven grinding machinery "the sugar industry progressively declined during the nineteenth century, and in 1864, after a severe drought, the tonnage of sugar exported dropped to 1,950 tons."[3] Two direct results of the sugar decline were the conversion of abandoned estates into sheep and cattle farms and an emphasis on cotton growing. The international demand for cotton was particularly high during and following the American Civil War, when the production of the southern

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[1]Johnson, fourth leaf.
[2]C.E. Eves, The West Indies (London, 1889), p. 276.
[3]Report of the Commission Appointed to Enquire into the Organisation of the Sugar Industry of Antigua (London: Crown Agents for the Colonies, 1949), p. 3.

United States was drastically reduced.

Summary of the nineteenth century

The most important single event in this century was the granting of immediate freedom to all slaves. This act was a turning point in the history of the sugar culture: with labour on a wage basis sugar planters were forced to seek a greater measure of efficiency in the operation of their estates; hence there was increased experimentation with new methods of tillage, grinding and so on. This attitude was long overdue; methods had been notoriously wasteful and out of date. With the Negroes free to choose their own vocation there was a gradual movement of workers away from sugar into subsistence farming or odd jobs, a trend which has continued in the twentieth century and has produced a large number of peasant cultivators. A shortage of labour around mid-century forced planters to encourage the immigration of a number of Madeirans. The competition of foreign sugar-producing areas, the attitude of free trade, and the use of beet sugar in Europe all combined to put the Antigua sugar industry into a very unhealthy state by 1900.

VI. RECENT DEVELOPMENT

Sugar in the twentieth century

It has been said that the West Indian sugar islands suffered in the last half of the preceding century as their monopoly and protection disappeared.

> Britain bought in the cheapest market, and her import of colonial sugar fell from 63 per cent in 1861 to 14 per cent in 1886 and 2.5 per cent in 1900. The selling price of sugar also fell from 29s. per cwt. in 1881 to 4s. 9d. in 1896. Subsidised beet-sugar drove colonial sugar out of the market.[1]

Despite hard times Antigua continued to concentrate on the export of sugar, even after the bad years of 1850-1900, which culminated in the appointment of a Royal Commission in 1897 to investigate the West Indian sugar industry and find out if it was really headed for extinction. This Commission emphasized the insecurity of a sugar monoculture, an insecurity which had permeated West Indian history and which would most certainly bring on fresh economic crises in the future. Further, the Commission criticized the restricting effect of a sugar monoculture on the labouring classes, which, in the event of the failure of sugar plantations, would be unprepared for any other sort of life. Agriculture diversification, the encouragement of small farms, and the establishment of industries were generally recommended.

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[1]Parry, p. 242.

Fig. 33.--Boys from Bolans Village.

Fig. 34.--Street in Bolans Village. The hard surfaced road lends an appearance of neatness which is not characteristic of all Antigua villages. The size and type of house, however, is standard.

Faced with an unpromising outlook for sugar, many West Indian islands chose to abandon this crop and encourage the production of others. Jamaica emphasized bananas, and by 1896 sugar represented only 18% of its total exports.[1] Haiti concentrated on coffee, Trinidad on cacao, Grenada on cacao and spices, St. Vincent on arrowroot, and Montserrat on limes. Small, mountainous islands such as the Virgins, Montserrat and Grenada, which had been marginal producers of sugar, were squeezed out by economic conditions of the nineteenth century. What were the factors which enabled Antigua to retain its sugar monoculture?

The islands that held on to sugar after 1900 were forced to create larger production units in order to increase efficiency. The vast number of private plantations was reduced, and there was a trend towards centralization. Fortunately, the physical conditions on Antigua favoured such a change: much of the land was low and level, fertile and accessible. There were no obstacles to amalgamation of estates or the erection of central grinding facilities. In addition, there was at this time no competition for land on the part of peasant proprietors. Relatively few peasants existed, and in any case land was available for them in southern and eastern regions, where soils were lighter and more manageable. The sugar industry had also the advantage of an adequate labour force, and, finally, it is useful to point out that the low rainfall excluded the possibility of

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[1] Ibid.

raising commercially such crops as coffee, cacao and bananas.

Antigua is still a sugar island. The only other cash crop of real importance today is cotton. The statement was made in 1949 that "sugar--and to a much lesser extent cotton--has been proved over the years to be the only crop suitable for export which can be depended upon to give a reasonable return per acre, save under the most exceptional conditions."[1]

The Antigua Sugar Factory

A drastic alteration occurred within the sugar industry as the century opened. This was the construction of a central sugar factory designed to process all the cane grown on the island. Located at Gunthorpe's, the Antigua Sugar Factory was completed in 1905 and has been operating ever since. It was basically a product of the realization that the repetition of cane processing facilities on every estate was a highly wasteful extravagance. In order to survive the industry had to increase its efficiency. The extensive use of fertilizers, steam ploughs, steam-operated mills and countless other innovations had helped increase yields before 1900, but it was still necessary to adopt much greater economies, to imitate the large scale methods of Cuba. In this the most fundamental improvement was the erection of a large sugar works to serve all cane growers, the equivalent of a Cuban "centrale."

In its first year of operation the factory produced 1,634 tons of sugar; it exceeded 10,000 tons in 1916 and

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[1]Sugar Commission, p. 1.

surpassed 20,000 tons in 1933.[1] If a comparison is made with the figures for the total annual production of the island, it is seen that the factory produced an increasingly higher percentage of the island total during the period 1928-47 and always more than 85%. There was, in fact, only one other producer on the island, namely the Montpelier Factory, owned by the Antigua Distillery, Ltd.

TABLE 8

ANTIGUA SUGAR PRODUCTION IN FIVE-YEAR PERIODS 1928-47

Year	Total Antigua[a] (in Tons)	Percentage by Antigua Sugar Factory[b]
1928-32	14,639	85.1
1933-37	20,820	96.2
1938-42	19,666	93.3
1943-47	22,491	95.6

[a]Deerr, I, 196.
[b]Sugar Commission, derived from table on p. 7.

The Antigua Sugar Factory processes the cane grown by estates, land settlements (see figure 39) and other peasant farmers. The suppliers are paid in a two-payment plan which distributes to them a share of the factory's profits. If the growers do not meet the factory's requirements as to promptness of delivery at the railway sidings, the bonus is reduced. Under this system the chief suppliers of cane are estates--ones which have continued to grow cane under private ownership (see figure 41), ones which have

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[1]Ibid., p. 7.

SUGAR CANE RAILWAY

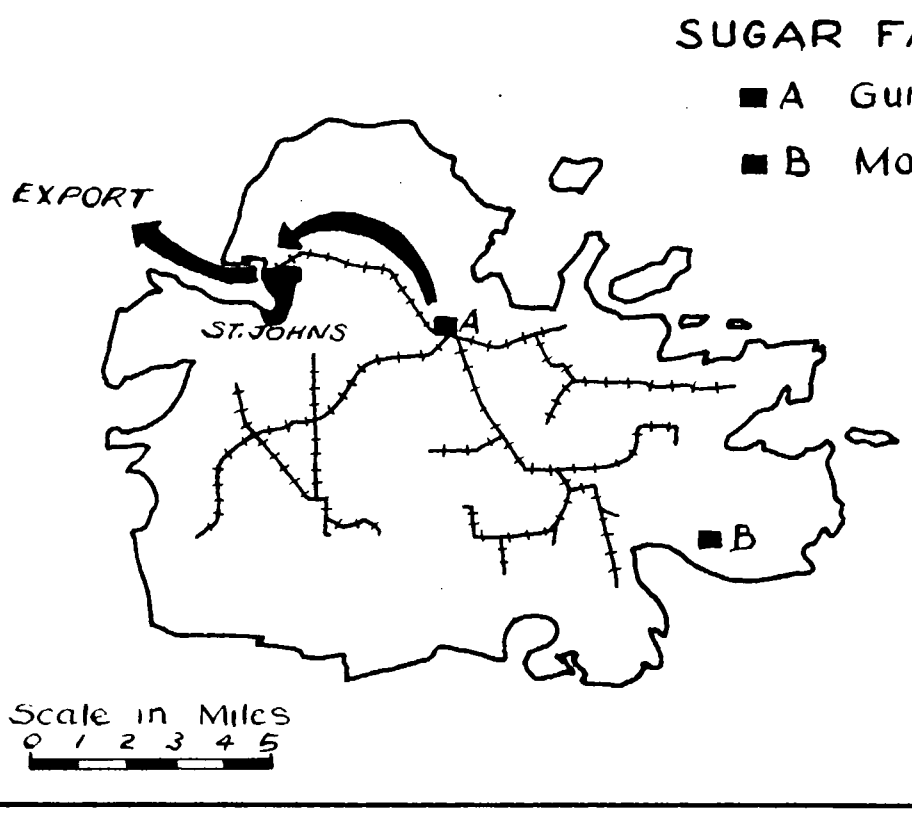

Fig. 35

MAIN ROADS AND SETTLEMENTS

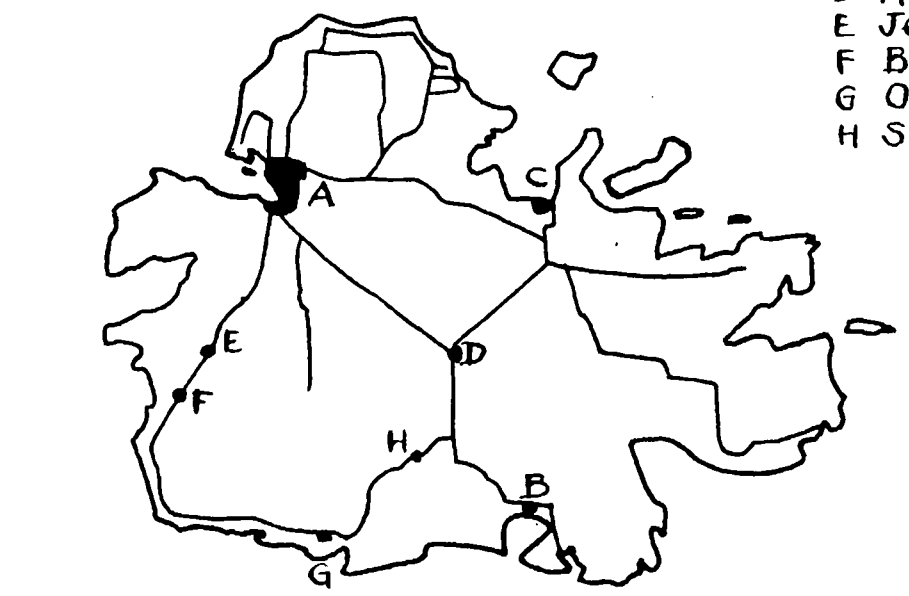

Fig. 36

rented some or all of their fields to peasants, and ones which are amalgamated under the Antigua Syndicate Estates, Ltd. (see figure 40).

These estates, whatever the details of their ownership today, are existing remnants of the historic days of sugar cultivation. Many of the estates, if not the buildings themselves, date from slavery days, and a large number of the present names are to be found on the old maps of the 1700's. One receives a real impression of history when visiting these estates today, and yet everything has changed; the day of the privately owned and operated estate is past. A few remain, occupied by their owner-operators (for the days of absentee ownership have long since faded) and paying wages to Negro workers, but most estates have either sold their lands to the Syndicate or rented most of their land out to peasants. With few exceptions,[1] an estate in Antigua has either lost its identity completely or has become the part-time residence of a rich American.

Apart from the estates, cane is supplied to the Antigua Sugar Factory by peasants who are established on government-organized land settlements and from some who own or rent land outside this arrangement. If we include the peasants who are using estate land (under rental) the total contribution by all peasants amounts to approximately 26% of

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[1]One such exception is Wetherall's Estate, a good example of an old estate operating with modern methods and twentieth century attitudes. The estate grows cotton and is managed efficiently by Mrs. Schaefer, who is also owner.

the total cane supplied to the factory.

The following table gives a breakdown of the sources of cane supplied to the factory in one year.

TABLE 9

SUPPLIERS OF CANE TO THE ANTIGUA SUGAR FACTORY IN 1947[a]

Group	Total Area (Acres)	Deliveries of Cane (Tons)	
		Estates	Peasants
Antigua Syndicate Estates	17,719	110,771	8,384
Private estates, no peasants	2,522	10,331	--
Private estates, some peasants[b]	2,248	5,524	2,102
Private estates, all peasants[b]	6,585	--	17,722
Land settlements	12,055	--	18,096
Total	41,129	126,626	46,304

[a]Sugar Commission, p. 14.
[b]These estates rent all or part of their land to peasants.

One of the factors which made possible the establishment of a central sugar factory was the application of modern methods of transportation to the collection of sugar cane. Before the use of the railway the cane was carried on wagons drawn by beasts of burden or on the backs of donkeys.

A large number of estates were operating simultaneously all over the island, each collecting from its immediate area with the inefficient transportation methods. Clearly, cane could not have been collected by a centrale from all parts of the island under such a scheme. The erection of the Antigua Sugar Factory made a revision of the transportation techniques essential, as it proposed to process virtually all the island's cane. A railway network was therefore extended radially from the factory at Gunthorpe's; in 1949 it consisted of more than fifty miles of track (see figure 35). Deliveries of cane are made to the railway sidings by donkey, cart or truck, and from there loaded directly onto passing flatcars pulled by Diesel locomotives.

It is apparent that the railway system does not serve all parts of the island. The spurs seem hesitant to reach into the far eastern portions of St. Philip Parish, the northern section of St. John Parish and the volcanic district of the southwest. Of these the first area is very dry and comparatively unproductive, the second possesses light, sandy soils little used for cane growing, and the third provides little cane because of its relief and inaccessibility. The railway is naturally confined to the areas in which cane is the major crop, namely the central part of the limestone district and the central plain. The areas mentioned above which are not attached to the sugar factory by railway tracks are fortunately employed for the raising of crops other than

Fig. 37.--Cutting cane in Orange Valley. Sugar cane is harvested by hand everywhere in Antigua, just as it was 200 years ago. In 1958 a mechanical reaper was on order from the United States for trial on the Syndicate Estates land.

Fig. 38.--The establishment of a central sugar factory in 1905 made necessary an improvement in methods of collecting cane from the fields. Cane is now transported to the factory on small railway flatcars pulled by Diesel locomotives (see figure 35).

sugar, notably cotton in the north and food crops in the south. Peasant-grown cane also exists in these areas, but it must meet the problem of poor transportation facilities to the railway spurs. In the southern region there has been a feeling that some cash crop should be introduced. There used to be a sugar factory at Claremont which processed the cane produced in the southern part of the volcanic district, but it ceased operation and left cane growers in a sort of vacuum. The labour interests of Antigua suggested in 1949 that this factory should be reactivated with government aid, but the recommendation has not been followed and rightly so because it is not a good cane growing area. Rather, the government has encouraged experimental cultivation of other crops, arrowroot in particular.

The Montpelier Sugar Factory

Apart from the Antigua Sugar Factory, the only factory in operation today is that at Montpelier. It is located north of Willoughby Bay, in St. Philip Parish (see figure 35) and is owned by the Antigua Distillery, Ltd., a company which was incorporated in 1934. In 1943 this company bought the rundown Montpelier factory and estate and put the works back into operation by 1947. The capacity of the mill in 1949 was about twelve tons of cane per hour (the Antigua Sugar Factory handles sixty-five per hour), and the product was "grocery muscovado" which was marketed in Canada. Cane is grown on lands owned by the Company, by peasants renting

Company lands and by the Mannings and Sherriffs Land Settlement, a little farther east. The annual production of the factory is small (not more than 400 tons up to 1949), and its principal advantage is that it provides employment in the area and stimulates cane production.

The Antigua Syndicate Estates, Ltd.

The establishment of the Antigua Sugar Factory in 1905 brought centralization and efficiency to the operation of processing the cane into sugar. Apart from improvements in mill equipment over that of the several muscovado mills which had existed prior to 1905, there were economies in transportation of the cane and the finished product[1] as well and in staff operation. And there were opportunities to institute uniform standards and policies under the advice of hired sugar experts.

However, there was no means of influencing the actual cultivation of cane. This was desirable to obtain in order to ensure sound management of the estate lands and to make possible a greater degree of economy and planning. During the Second World War the sugar industry was menaced by a labour shortage, said to be the result of more attractive employment offered in the construction of an American military base in the North Sound area, and an amalgamation of estates was considered essential to introduce greater efficiency to the growing and collecting of cane. The

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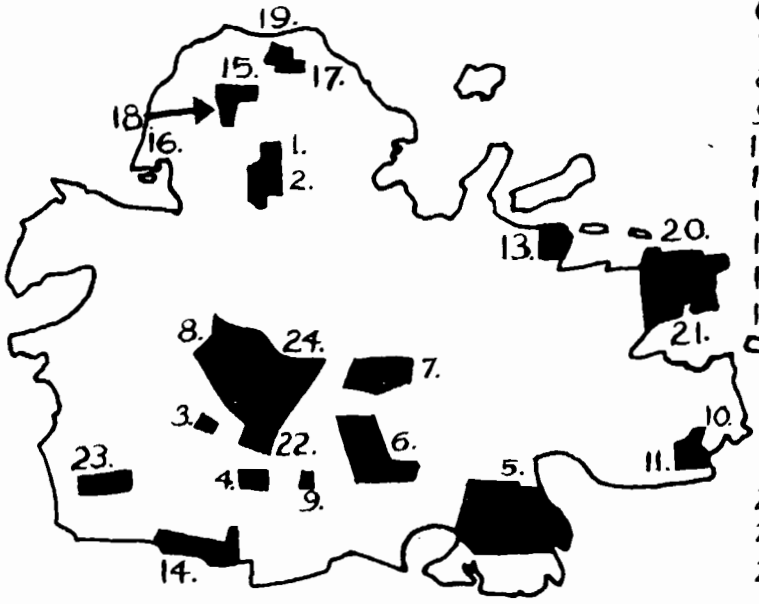
[1]Granulated sugar was produced.

LAND SETTLEMENTS

From Sugar Commission Report 1949



Scale in Miles
0 1 2 3 4 5

1. Clare Hall
2. Skerretts
3. Sawcolts
4. Wallings
5. Piccadilly
} 1916-1923

6. Matthews
7. Jonas
8. Greencastle
} 1930 1933

9. The Folly

10. Mannings
11. Sherriffs
} 1939-1943

12. Indian Town
13. Coconut Hall 1943
14. Southern Settlements '45
15. Langfords 1945
16. McKinnons 1947
17. Royals
18. Marble Hill 1945
19. Harts & Royals 1946
20. Rooms 1946
21. Comfort Hall 1946
22. Brecknocks
23. Orange Valley 1946
24. Belvidere 1948

Fig. 39

SYNDICATE ESTATE LAND

Same source as above

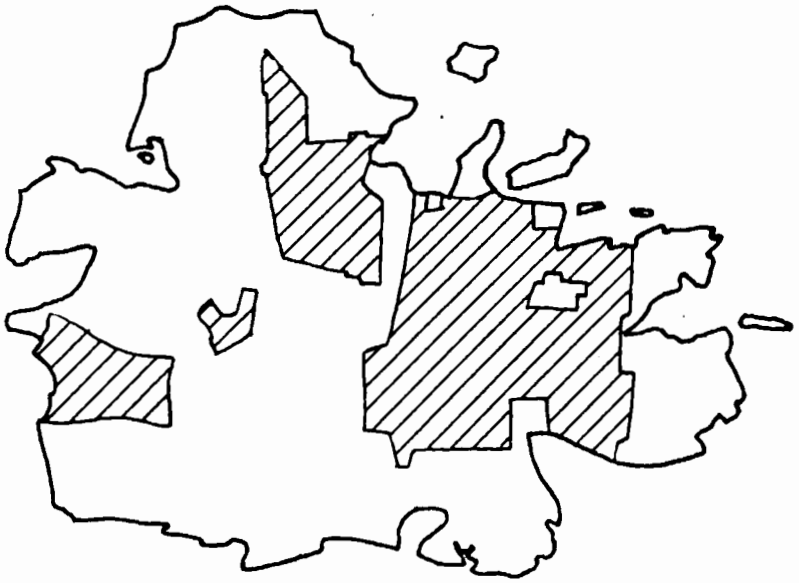


Fig. 40

Syndicate Estates was formed in 1943 and has continued to purchase estates by cash or by issuance of shares and occasionally under lease. In all, a total of twenty-three separate estates were incorporated by 1948, and these were reorganized into twelve divisions for convenience. Each division has a manager and one or two overseers in general charge. These lands amounted to almost 13,000 acres in 1948, of which just over 9,000 was classed as arable.[1] (Syndicate Estate lands are shown in figure 40.)

The amalgamation of estates under Syndicate Estates had beneficial results. Between 1944 and 1947 a net profit of £6,300 was made, while the "most efficiently worked independent estates" suffered a net loss of £26,187.[2] Greater yields were obtained per acre, and additional areas which formerly could not be economically farmed were brought into cultivation. The use of modern machines was expanded considerably, and Syndicate machines now give vital assistance even to independent estates and the land settlements in ploughing time. Tractors are used not only in the fields, but for haulage of cane to the railway sidings, and some mobile cranes have been provided for cane loading.

The combination of a central factory and a syndication of estates cannot be criticized on the basis of efficiency. There has been an increase in sugar production on Antigua, and in view of the climatic variability the

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[1]Sugar Commission, pp. 14-15.
[2]Ibid., p. 15.

difference in figures of cane yield per acre between Antigua and St. Kitts or Barbados does not appear serious.[1] Nevertheless, the organization of the sugar industry does receive two criticisms (at least) from the labour union authorities: they state that the Syndicate Estates have taken the best lands and left peasant cultivators only the poorest, and they point out that the Syndicate Estates employ only 3,000 people (or about 7% of the population), presumably much less than under the old system of private estates. Neither of these statements appears to be strictly true: the main sugar lands under the Syndicate are in the heavy clay soils, which are quite unsuited to peasant agriculture and require the heavy ploughing and irrigation that only a large organization can afford. The number of people employed by the sugar industry has not decreased, according to the estimate of the Syndicate general manager; whereas workers have been decreasing in number in the unskilled field jobs, there is a compensatory increase in jobs requiring more skill, such as in the machine workshop at Tomlinsons which employs about eighty.

Peasant agriculture

The beginnings of peasant agriculture on Antigua are found in the slavery period, when slaves were allowed one day each week on which to pursue their own agricultural and

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[1] Ibid., p. 21. In the period 1944-47 inclusive the yield of cane per reaped acre was 22.1 on Antigua Syndicate Estates, 27.1 on St. Kitts and 27.7 on Barbados.

commercial affairs. This was either a Saturday or a Sunday, and it was marked by a furious activity in the village markets, where produce from Negro plots was sold. The "Sunday market" was also a social affair, with workers from many plantations chatting, singing, laughing and discussing the weekly gossip. It was probably the most cherished privilege that the slaves possessed.

There are no details on the location of Negro food plots, their size or number, and we may only assume that free Negroes and coloureds often managed to acquire small pieces of land outside the limits of estate land, and that they formed the island's first peasantry. Perhaps slaves were permitted small plots as well. The largest number of Negro plots was probably in the volcanic district, but it is necessary to recall that during the eighteenth century sugar estates found it profitable to occupy much of the steepest and highest land on Antigua: the area occupied by the peasantry must have fluctuated according to the variations in estate boundaries, increasing in poor sugar years and decreasing as the demand for land by the estates rose in good times. In general, however, there was not much land beyond the estates, and the prospects for peasant settlement were not so large as on St. Kitts, for example.

Emancipation did not bring about any increase in the amount of non-estate land. In fact, some abandoned estates came back into cultivation. But the Negroes were given an

opportunity to become farmers, and, in all probability, a considerable number began crowding into any available land for this purpose. Later in the nineteenth century, as the estates found sugar cane cultivation less rewarding and their numbers dropped, more land was released for Negro farmers. Nevertheless, the amount was small, and in 1900 there was still a noticeable lack of a large agricultural peasantry in Antigua.

The Royal Commission of 1897 was responsible for the initiation of a systematic programme to develop small farming in Antigua. The members of this body pointed out that labourers had become overly dependent on the sugar estates, and little opportunity existed for them to progress beyond the simple responsibilities of field workers. There was an insufficient attachment between the Negro population and the land, a deplorable lack of security, and an embarrassingly small local production of food crops. In other words, the cash crop for export trend had become too deeply entrenched and had become detrimental to the people and the economy. The Commission stated, "It seems to us that no reform affords so good a prospect for the permanent welfare in the future of the West Indies as the settlement of the labouring population on the land as small peasant proprietors."[1]

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[1]Eric Williams, "The Importance of Small Scale Farming in the Caribbean," Small Scale Farming in the Caribbean, selected from the documentation and report of the Conference on Education and Small Scale Farming (Trinidad, 1954), p. 5, quoting the Royal Commission of 1897.

This popular statement has often been taken out of text and twisted to imply that all other forms of agriculture should be discouraged--in particular, the large estates--but the Commission did not intend this. They did suggest that in islands where extensive sugar production had not developed it be discouraged in the future, but they also realized that established, efficient, large-scale sugar industries were vital to the economy of certain islands and should certainly not be discouraged. Accordingly, the intention has been, on Antigua, to encourage not only an increase in peasant farming but also a continuance of large-scale sugar making--the first to create a class of independent small cultivators and to encourage the production of food crops, and the second to provide the island with a money-earning export crop. It was recognized by the Commission of 1897 that a coexistence of these two contrasting forms of agriculture was not only possible but desirable.

It is natural that two types of farming so different in character and purpose should come into conflict in some way. This is evident in Antigua, where plantation interests often view peasant agriculture with derision, and the small cultivators accord to the large-scale farming an undisguised resentment. It is quite to be expected: understanding and cooperation are bound to be difficult between two such contrasting groups, one of which depends upon size and efficiency for survival and the other which is able and content

PRIVATE ESTATE LAND

From Sugar Commission Report

1949

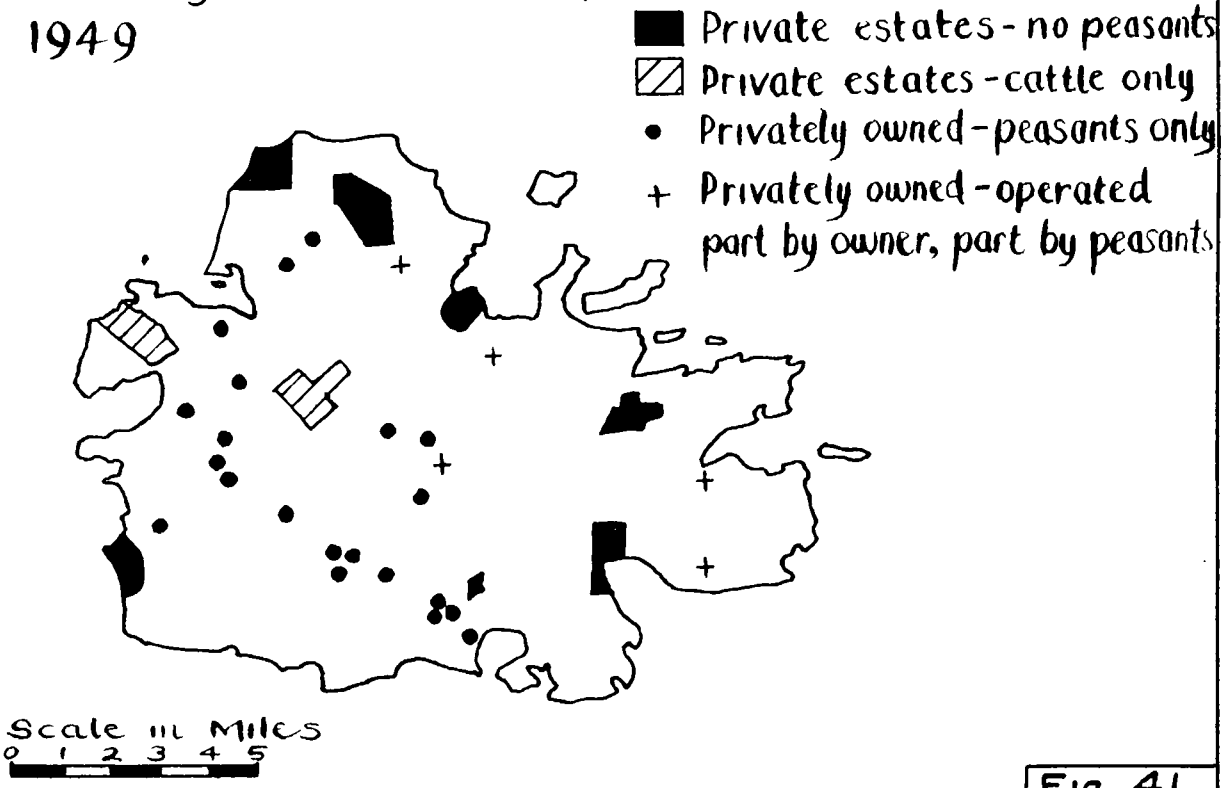

Fig. 41

GENERALIZED LAND USE

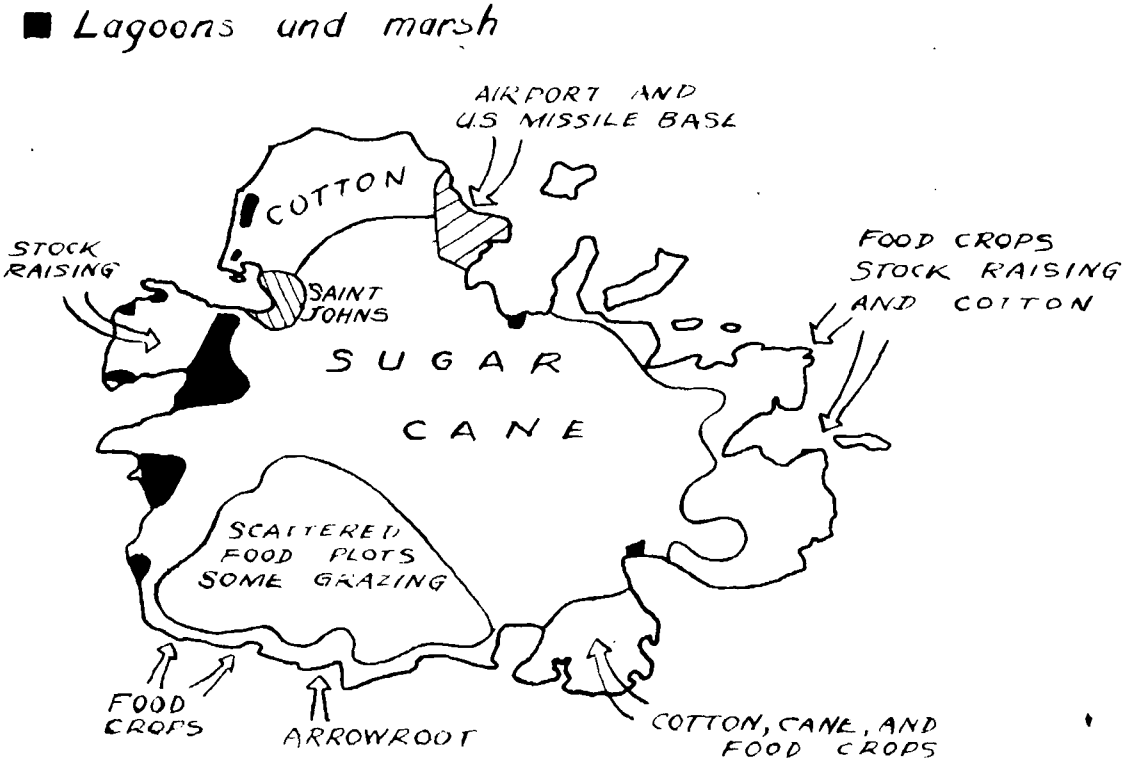

Fig. 42

to live off a bare minimum of effort and production.

There are violent contrasts between subsistence and commercial agriculture, between peasants and estates, food crops and sugar cane, and yet both small and large types of farming are required in Antigua. In purpose they are not at variance but rather complementary to one another, the object of small farming being to raise food crops and settle people on the land and that of estate agriculture to produce a large and valuable export.[1]

An interesting aspect of these two types of farming is that they are complementary not only in purpose but in geographical distribution as well (compare figures 39 and 40). The commercial sugar land today is principally that under the Syndicate Estates, and it is land which has been under estate cultivation for about 300 years. It is fairly low and level, reasonably fertile, suitably watered in most years, and well located for export via the port of St. Johns (see figure 42). The land occupied by peasant land settlements and subsistence farmers, on the other hand, is exterior in position and different in character, being generally more hilly and less accessible. Peasant interests often complain that the Syndicate Estates have taken all the best land, but this is misleading. In the first place there is no question of their having taken any land, as it has been under plantation owner-

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[1]Whether or not the peasant agriculture has fulfilled its purpose is another question: most of the peasants prefer raising sugar cane because it requires less effort than food crops, and Antigua continues to rely on imported food.

ship for three centuries. Secondly, whereas it is without question the best land for large-scale sugar raising, it is not necessarily the best land for peasant farming: here we may recall Charter's statement that the clayey soils of the central plain are unsuited to peasant cultivation. Conversely, the slopes of the volcanic district may be well adapted to subsistence farming but are completely unsuitable for large-scale commercial agriculture.

The land settlements

Organized land settlement began in Antigua in 1916 with the purchase of estates which had deteriorated and were not actively producing sugar. The land was divided into small plots of one to three acres and allotted on a freehold basis to peasants. Between 1916 and 1928 small farmers were established on the estates of Sawcolts, Wallings, Skerretts and Clare Hall. The government had been permitting peasants to rent plots in the Piccadilly area for over fifty years, and after 1916 this area was also brought into the land settlement scheme, whereby the plots could be purchased on long term cash arrangements. The estates of Greencastle, Matthews and Jonas were added between 1930 and 1933, those of Mannings and Sheriffs from 1939 to 1945, and many more in the years just after the war. The number of estates purchased by 1949 was twenty-four, and the total acreage amounted to 12,055, or about 17% of the area of Antigua (see figure 39). Of this it was estimated that 3,614 acres

were arable. As a comparison, the stated arable acreage of lands under the Syndicate Estates at this time was 7,887 acres or a little more than twice as much.

The purpose of the small farm programme in Antigua was to increase the production of food crops, apart from the intended sociological advantages of having a considerable proportion of the population settled on and actively working the land. This was definitely stated by Shephard after his investigation of 1939, and his description of the origin of the movement will bear repetition here:

> Sawcolts settlement was commenced in 1916 when the shortage of shipping had made it desirable to encourage food production. The lots were to be of not less than one, and not more than three, acres in size, and half the original lots were, in fact, of 1 acre. The lots were not intended to provide full-time occupation for the allottees. Sweet potatoes were to be the principal crop grown both for family consumption and family sale: but these small food plots soon lost their popularity and sugar cane crept in even before the end of the war and soon became a major crop. The experiment at Sawcolts was regarded as a great success, and in 1922 it was decided to extend the experiment to other Crown Lands, including Clare Hall.[1]

From this it is clear that the development of the land settlements has been along lines different from those originally intended, and that they have made relatively little contribution to the supply of food crops. This is a significant criticism of the system today, and blame may be attached to the agricultural authorities. The Royal Commission of 1897, it may be remembered, considered that peasant cultivation would make a number of people independent

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[1]Sugar Commission, p. 27, quoting C.Y. Shephard, Report on Peasant Agriculture in the Leeward and Windward Islands.

of the economic crises attendant on a sugar monoculture, but on Antigua the peasants have been permitted to concentrate on the growing of sugar cane, so that the dependence on sugar still remains. In 1949 the Sugar Commission stated:

> We are of the opinion that, when plots are specifically provided for the purpose of growing food crops, the growing of sugar cane for sale to a factory should be discouraged. . . . In order to avoid gluts and interference with the production of sugar, it is more in the interest of the island that food crops should be grown by the peasants than by the estates.[1]

Land tenure in the settlements

The system of land tenure adopted in the early years of the land settlement was one of freehold, the land being sold to the peasant, who paid over a period of time. It was considered then that the privilege of ownership would create security and encourage good management. The pride of a man in his own property would stimulate a responsible attitude towards its care. But Shephard urged the substitution of a leasehold system in 1939; this was adopted immediately and is still the scheme by which peasants' land is allotted. This sudden change in policy is reflected in attitudes in most parts of the Caribbean: at first the feeling was that ownership was more valuable to the worker and to the society, but more recently the shortcomings of the freehold arrangement have been realized. The biggest of these is the inevitable fragmentation of holdings which develops through inheritance within the family; a one acre plot cannot be

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[1]Sugar Commission, p. 27.

subdivided very far without an enormous sacrifice in operating efficiency, yields and total production. Even "the introduction of efficient methods of cultivation is circumscribed by the small size of the parcels, and much waste of land takes place by provision of boundaries and in other ways."[1] Also, the supposed sense of pride and responsibility which the freehold system should develop has not appeared, generally speaking, in the West Indies. In fact, the opinion has been expressed that freehold "appears to confer on many West Indians a sense of irresponsibility regarding land use";[2] why, it is not completely clear.

The leasehold system has apparently proved more satisfactory. Its advantages may be thus summarized:

1) It prevents fragmentation of holdings.

2) It makes possible a greater application of capital than under an individual peasant owner.

3) It can include more careful supervision of methods and thus guard against soil erosion and other harmful effects.

4) The landlord (in this case the government) can influence the tenants and their choice of crops by the terms of the rent contract.

Peasant plots

Sugar is the leading crop produced by peasants on

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[1]V. Liversage, Land Tenure in the Colonies (Cambridge: Cambridge University Press, 1945), p. 66.

[2]A.L. Jolly, "Small Scale Farm Management Problems," Small Scale Farming in the Caribbean, p. 16.

Antigua, whether on land settlements or on other land. Cotton is next in importance, being common in the northeast, the eastern regions and in Piccadilly--all comparatively dry areas. A variety of root and tree crops may also be found. Arrowroot cultivation has been encouraged in the Carlisle Bay district, and farther west along the coast the agricultural authorities are supervising the raising of pineapples and aloes on a small scale (see figure 45). Poultry is common, chickens and hens constituting a serious obstacle to bicycle or car travel on the roads, and many peasants own cows, horses or pigs. The common beast of burden is the donkey.

What is the optimum size of a peasant plot in the West Indies? Five acres has been called "the minimum economic area for a contented peasant."[1] However, recent investigations at the Imperial College of Agriculture in Trinidad show that under intensive market gardening a plot of one and a quarter acres can provide a good living for a man and wife.[2] There are many factors to consider, of course, the quality of the peasant offering as many variables as that of the land itself. The experiments in Trinidad only demonstrate what can be done in a particular trial, under controlled conditions. With greater numbers of peasants, less supervision, a more limited supply of capital, and possibly the attraction of part-time wage earning jobs, the situation becomes more complex.

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[1] Liversage, p. 65, quoting Skeete.
[2] Jolly, pp. 19-20.

Peasant agriculture in Antigua is characterized by the small average size of plots and the part-time nature of much of the farming. On the Sawcolts Settlement of 1916 the holdings averaged just over one acre in size.[1] In 1949 the average size within all the land settlements was 2.6 acres,[2] and the size of plots rented by peasants from private estates was about the same. A large number of holdings in 1949 were under one acre but almost none were above ten acres in size. Large variations occurred from one region to another; the largest plots were in Matthews Land Settlement (average 4.6 acres) and the smallest in The Folly (0.9 acres). Strangely enough, these two settlements are practically side by side.

TABLE 10

SIZE OF PEASANT HOLDINGS[a]

	Percentage of Holdings of Size Indicated		
	Under 1 Acre	1-5 Acres	5-10 Acres
Land Settlements	30	63	7
Private Estates	20	79	1

[a]Sugar Commission, pp. 33 and 25.

For many of the peasant farmers agriculture is but a part-time vocation: while their cane or cotton ripens

[1]Sugar Commission, p. 27, quoting Shephard.
[2]Ibid., p. 33.

under the hot sun, they seek employment of other sorts, usually as field workers in commercial sugar fields. To them this is the most casual and, at the same time, the most lucrative arrangement. The cultivation of food crops requires more labour and technique and is not so popular as the raising of cane. Therein lies the basic problem of peasant agriculture in Antigua--the preference for raising cane rather than food crops. As a result, there is a shortage of local food production and a large quantity of inefficiently produced cane.

Beyond the understandable preference of the natives for cane, it is possible that the size of plots is not sufficiently large for full-time farming. Certainly the early ones at Sawcolts seem to have been very small, and it may be that they were designed only for part-time occupation. In 1921 Antigua's population slumped to 28,864; probably a labour shortage in the sugar industry created a strong demand for workers at the expense of peasant farming.

Distribution of peasant agriculture

Figure 39 shows the location of government land settlement in 1949 and figure 41 the distribution of private estates, some of which rent (all or part of their) land to peasants. Because peasant agriculture is considerably younger in origin than estate agriculture, it has taken up lands peripheral to the large scale sugar estates of the central plain. Peasant plots are found principally on the

flanks of the volcanic district and in the coastal regions of the north and east. Although many peasant holdings are in hilly or comparatively dry areas, there is, nevertheless, a wide variety of physical conditions.[1] Some are on level land and some on hilly; some are under wet conditions and some under dry. There are some on each soil group.

A surprisingly large proportion of peasant settlement land is on the same soils used by the Syndicate Estates. Eleven of the land settlements, comprising 9,273 acres, or about 75% of the entire area of all settlements, have as their dominant soil either the Bendals, Blubber Valley or St. Clair series, or soils of the Otto Suite. These soils have been described as "heavy clays of poor natural drainage which are low in organic matter."[2] Despite their clayey texture and lack of humus they constitute the principal soils of the commercial sugar lands; mechanization is extensively used in their preparation, and commercial fertilizers are applied. For peasant cultivation, however, this type of soil is less attractive, because it is extremely difficult to work by hand methods. Many have emphasized that the heavy soils are unsuited to peasant farming, but since the formation of the Peasant Development Organization in 1954 the land settlements have been served by the tractors of a central mechanical unit. Peasants as well as estates can now

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[1]The frequent generalizations that one or another type of agriculture has the worst land on Antigua are not very meaningful in view of the diversity of physical conditions within peasant agriculture alone.

[2]Sugar Commission, p. 9.

employ mechanized tillage; the disadvantage of the heavy soils has been reduced.

The total number of peasant farmers in Antigua appears to be at least 4,100, of which over 2,200 are on government land settlements and the remainder chiefly on land rented from private estates or from the Syndicate Estates.

Deforestation and soil erosion

The Antigua peasantry has little tradition of agriculture behind it, and, to a certain extent, poor standards of husbandry may be expected. In the land settlements there is some control of farming practices, especially under a leasehold system of land tenure, but this supervision is not a strict one. Outside the settlements the peasant is even more on his own.

There is a very casual attitude towards rotation of crops and application of fertilizer. There is often a lack of foresight in planting and harvesting, and in the reserving of cane tops for the next planting. The most dangerous habit, and one which is bound to have far reaching consequences if allowed to continue, is the practice of clearing and cultivating slopes which are too steep.

This is far from being a new phenomenon. Steep land was cleared even by estates in the eighteenth century, and probably at most times during slavery days the high mountain land which remained uncleared by estates was occupied by slave

food plots, although the number of these was doubtless small. During the nineteenth century there were heavy demands on the woodland growth of the volcanic district, and by 1895 the island was devoid of any timber resources of note. In 1886 a policy of reforestation was recommended, but it was not carried out. Second growth forest was growing up in abandoned cane fields and helping to slow the processes of erosion, but there was a certain amount of shifting cultivation on the steep slopes which was undoing the slow work of nature at a rapid rate.

As important drainage basins were deforested, the effects of soil erosion severely affected the water supply of the island. In 1912 Tempany[1] observed with alarm the conditions in the Wallings area and recommended reforestation. In 1913-16 this area was sown, and the forest here was described by Beard in 1949 as being the oldest and most luxuriant on Antigua. Apart from the work at Wallings little tree planting has ever been done on Antigua except around water ponds and on certain estates. Never has a real reforestation programme or policy been implemented, as Cater points out. In 1944 he observed, "Water supply is a serious problem in Antigua and severe droughts lead to considerable distress. The low rainfall is largely responsible, but some blame must be laid on the extensive deforestation."[2]

Despite the far-sighted move at Wallings, peasants

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[1]Tempany was agricultural superintendent at the time.
[2]Cater, p. 7.

Fig. 43.--Clearing steep land near Claremont. An enactment forbids the clearing of steep land without permission of the agricultural authorities, but enforcement is not strict and soil erosion often results.

continued to maltreat dangerously the hilly land. The Wallings area was reserved and protected, but in 1924 the Governor allowed peasants to clear very steep slopes just outside this area. Protests were made by the agricultural authorities, but in vain, and the practice of burning the steep hillsides and setting cattle out to graze went on. There is no indication that the process has been effectively checked since then. While visiting Antigua in 1958 I inquired about the problem of shifting cultivators on steep slopes and was informed that an enactment had suitably arrested the dangerous practice of removing the natural vegetation from hillsides. In order for a peasant to clear land it was necessary first to obtain the approval of the Department of Agriculture, it was explained. On a trip through the southern part of the island, however, I saw many examples of active cultivation on very steep slopes and witnessed a new area of steep forest land being burned out in the vicinity of Claremont (see figure 43). It was admitted that there was insufficient enforcement of the safequard. Nor was there any indication of special supervision of agricultural techniques on the steep plots. Such an offhand attitude towards soil conservation cannot fail to have serious adverse results, especially in view of the increasing population of Antigua.

Other crops and industries

Sugar is Antigua's main industry, occupying a large proportion of the arable acreage, paying wages to more men

and women than any other industry or service,[1] and taking first place among the exports with a value greater than all others put together.[2]

The dangers of overdependence on any one cash crop have often been emphasized, and from time to time other crops have been introduced to diversify the economy. Of these only cotton has had any lasting success, the others succumbing to disastrous changes in foreign demand or price, or retreating in the face of great difficulties in transportation services. Limes were grown in the early years of the century but faded after 1913; a pineapple production which flourished between 1880 and 1903 also declined before the First World War; cocoanut production used 500 acres in 1917, but has less than half now; tomatoes were exported in the interwar period, but the war interrupted shipping services and production ceased; onions were quite significant before the First World War made the purchase of seed supplies from the Canary Islands difficult; sisal is suited to the dry parts of the island, but its processing requires two scarce items, fresh water and capital; fruits such as mangoes, oranges, tangerines and grapefruits could be raised for local

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[1]During 1953 the sugar estates and factories employed an average of 3,903 workers; the next largest category was the dockworkers, numbering 332. Annual Report of the Labour Departments for the Year 1953 (Antigua, 1955), p. 14.

[2]In 1956 the value of exported sugar (26,950 tons) was BWI $3,412,764, while that of all exports was BWI $6,193,022. Sugar thus represented 55% of the total export value. The second export was cotton. "Statement of Exports from Antigua during the Year Ended 31st December, 1956" (mimeog.).

Fig. 44.--Well at Cade Bay. The alluvial deposits of the valleys cutting into the volcanic district provide good sources for water. This well was erected during the last war. In the photo some workers are receiving weekly wages.

Fig. 45.--Aloe cultivation at Cade Bay. The Department of Agriculture supervises the experimental raising of various food crops at several locations on the island. At Cade Bay pineapples and aloes are grown.

consumption but so far their cultivation has not spread beyond the boundaries of the Greencastle Experimental Station. It is one thing to find a useful crop which is adaptable to the conditions of climate and soil, but it is often a far more complex problem to find peasants who are willing to raise it. Recently there has been an effort to make arrowroot cultivation popular, and the crop is now raised in the southern part of the island. If production increases, it may be possible to use the famous arrowroot factory in the Old Road area, a building which was hopefully constructed before the production of the crop warranted it. Difficulties in installation of machinery has postponed the factory's operation since, and the arrowroot cultivation has not become popular among the peasants. Nevertheless, it may succeed in replacing the sugar cane which was formerly grown for the Claremont Factory, now unused. Experiments are being carried out on certain of the land settlements to determine the best methods of cultivating aloes, tomatoes, coffee, castor and pineapples. The Department of Agriculture supervises the plots (see figures 44 and 45).

Cotton

Cotton has become a secure cash crop on Antigua and it is the island's second most valuable export. It is similar to the arrowroot of the southwest in that it does not demand the same lands as sugar cane. It is complementary to sugar, growing well on the light sandy soils of the north,

lands which are not really suitable for sugar anyway. The two principal varieties grown are MSI (Montserrat Sea Island) and VH8, the latter a variety developed in St. Vincent in 1946 for fine quality and great strength. MSI was dominant in Antigua before 1951, but this variety proved difficult to market because of its low quality, and the VH8 was introduced. Four hundred acres of the new strain were planted in 1951 to provide a seed supply and enough for a trial shipment. The stock was maintained through the following season with 140 acres of estate land devoted to it, while the MSI variety occupied 3,000 acres.[1] By 1955 the acreage of both varieties increased to a total of almost 5,000. Since it is estimated that the total arable acreage of Antigua is approximately 35,000 acres,[2] cotton therefore accounted for about 14% of this area in 1955, which shows it to be a crop of significance.

Antigua is now the largest producer of cotton in the British West Indies, an eminence which it has obtained only recently, when its production surpassed those of St. Vincent and Montserrat. The table below summarizes the story of this rise.

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[1] Progress Reports from Experiment Stations, Season 1953-54, West Indies (London: The Empire Cotton Growing Corporation, 1954), p. 2.

[2] The estimates of arable acreage vary widely: Proudfoot says that there are only 23,000 arable acres. Malcolm J. Proudfoot, Population Movements in the Caribbean (Port-of-Spain, Trinidad: Kent House, 1950), p. 42.

Fig. 46.--Abandoned mill at Tibou Jarvis Estate. Sugar has been replaced by cotton in this area.

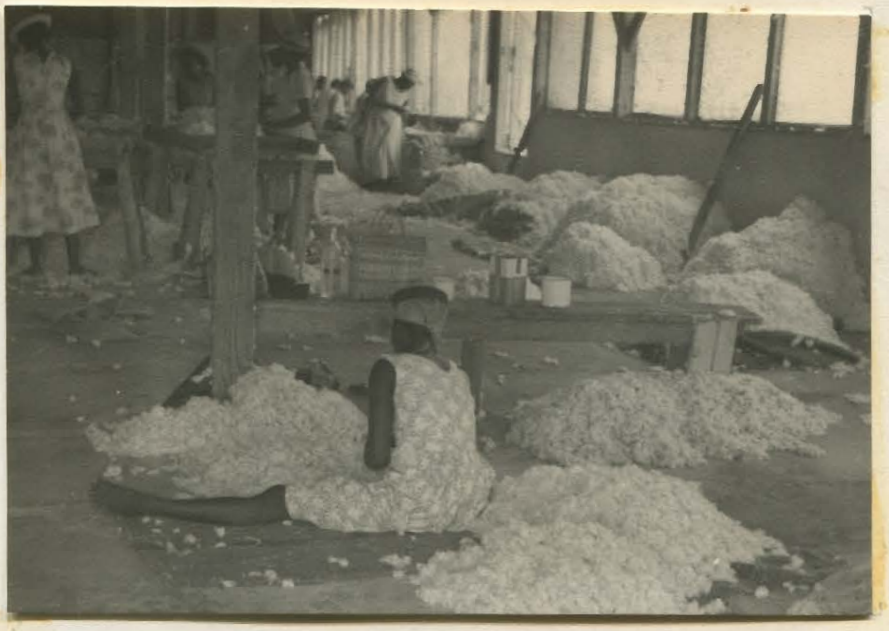

Fig. 47.--Cotton shed at Tibou Jarvis Estate. Peasant-grown cotton from the northern part of the island is collected here and prepared for ginning.

TABLE 11

EXPORTS OF COTTON FROM WEST INDIAN ISLANDS[a]

	1938	1948	1950
Antigua	174,842[b]	221,141	765,543
Mountserrat	432,461	633,703	397,290
St. Kitts	729,753	246,468	269,605
St. Vincent	688,224	257,794	388,487

[a]Aubrey R. Stark, British West Indies: Economic and Commercial Conditions in the Eastern Caribbean ("Overseas Economic Surveys"; London: Her Majesty's Stationery Office, 1952), p. 18.

[b]All figures represent number of pounds of cotton exported.

The cotton production varies considerably from year to year. As in the case of sugar this variation is dependent largely upon climate. Some of the insect pests, which can reduce so drastically the output of cotton, are numerous and difficult to control by sprays in dry weather.[1] On the other hand, wet weather promotes the growth of weeds. The insect pests which afflict the Antigua cotton crops include the pink bollworm, leafworm, Nezara viridula, aphis, Prodenia ornithogalli, bacterial blight, and cotton stainers. Many trials have been made by the Central Cotton Station in Antigua to test control methods for pests and weeds, as well

[1]This is true at least of the pink bollworm. A slight infestation in 1954-55 "was followed by a very dry closed season, with no rains capable of bringing the pink bollworm larvae in the soil out of diapause until the plant-int rains of August. As a result the 1955-56 Antigua crop was heavily attacked by pink bollworm." Progress Report, 1955-56 (London, 1957), p. 13.

as the advantages of different varieties of cotton rotation systems, fertilizers, spacing of plants and so on. The enforced closed season for cotton, usually running from mid-May to mid-August, is designed to destroy insect pests; all bushes must be uprooted and burned in these summer months.

Planting is carried on in August and September and reaping from January to April. Both estates and peasants raise the crop, and the ginning operation may be done in the government facilities at Cassada Garden or in a small ginnery in St. Johns. Cotton seeds are processed into edible oil or cottonseed meal.

Statistics are not sufficiently complete to permit a comparison between estate and peasant cultivation of the cotton crop, but it may be expected that the techniques of good husbandry, based on the extensive trials by the Central Cotton Station, are more easily applied to and more quickly adopted by estates. This is due to the centralized organization of estates as much as anything else, permitting better planning and a more predictable utilization of machinery. The peasant cultivators in 1958 generally used fewer sprays and fertilizers, were less energetic in keeping out weeds, and lagged behind the estates in the uprooting of plants at the end of the season, often far beyond the official deadline for this important operation.

Cotton has been described as a very suitable crop for Antigua; even the Sugar Commission of 1949 stated that "cotton remains the only crop which can be depended upon to give a

return comparable with that from sugar, and it is particularly well suited to light soils which are too dry for sugar."[1]

Livestock

As a means of assisting local food supply the raising of stock has great value, and it may also perform the valuable service of utilizing poor land. It has often been observed that the diet of the West Indian natives should include a much greater proportion of protein items such as milk, meat and eggs. The objection to livestock, in the case of Antigua, is on the grounds of population and space.. Cattle require considerable area of pasture in which to graze, and as the climate becomes more arid so the area needed to support a head of cattle becomes greater. Antigua is a dry island, and at the same time it has a large and growing population. Obviously, livestock raising, with its large spatial requirements, offers little solution to the problem, especially as it characteristically employs very few people.

Nevertheless, a certain amount of land on Antigua is devoted to this industry, and in 1956 a total of 3,755 animals were slaughtered for meat (cattle, sheep, goats and pigs).[2] Although two large estates are utilized for cattle raising on a large scale, a preferable arrangement would seem to be the ownership of a few cows by each family of peasant proprietors.

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[1]Sugar Commission, p. 37.

[2]Unpublished survey of economic conditions from the office of the Administrator in St. Johns, 1957, App. I.

Fig. 48.--Cane fields of Christian Valley. Looking southward towards the volcanic district one sees a sharp boundary between the flat alluvial cane fields and the steep forested hills. The heavy soils under the Syndicate Estates are cambered for better drainage.

Fig. 49.--Fishing sloops at Johnsons Point. There are seven important fish landing points on the island, of which Johnsons Point is one. It supplies the villages of the southwest coast. This design of boat is common in Antigua, and an increasing number are being provided with engines.

According to the results of the Peasant Investigation in Trinidad, a plot of three and a half acres growing cane and yams as commercial crops and possessing one milk cow could produce about 400 gallons of milk a year plus the cash crops, earning $1,340.[1]

Fishing

Increased consumption of fish is one way in which the low protein diet of the Antiguans can be improved. Traditionally salt fish has been imported from New England and the Maritime Provinces, and little fresh fish has been obtained from local waters. In slavery days estates obtained local fish for the masters' tables by detailing certain Negroes, probably household servants, to tend fish traps or buy in the village markets. Undoubtedly a number of Negroes became more or less permanent fisherman after emancipation, and the modern fishing industry was born.

Recently efforts have been made to revitalize the fishing industry. The aims of the programme have been to put engines in existing fishing sloops, to add new boats to the fleet, to increase fishing efficiency and to improve local marketing arrangements. Accordingly, the annual catch has risen steadily from a total of 536,729 pounds in 1954 to 1,369,409 in 1957.[2] It is of great significance that in 1957 the local catch exceeded the amount of imported fish--for the first time in history.

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[1]Jolly, p. 19.
[2]Economic Conditions, p. 6.

The tourist industry

Tourism itself is not new, for Antigua has always had transient visitors, even during the days of slavery. Many of these provided us with written accounts which are today valuable historic descriptions. In those days, however, there was not a tourist industry as we know it.

Today there are several resort hotels scattered along the coast from Dickinson Bay in the northwest to Half Moon Bay in the southeast. The principal factors in their location have been proximity to sand beaches and position on the windward side of the island where the onshore winds bring relief from heat. The ones in the north, such as the Antigua Beach Hotel, are not far from the airport. These hotels depend mostly on tourists from the United States and Canada. The Mill Reef Club holds land on the east coast at the extremity of St. Philip Parish, between Willoughby Bay and Nonsuch Bay. The members, mostly wealthy businessmen from the United States, may buy lots from the club and build houses upon them; so far about forty-five have been built. Mill Reef Club members are most numerous on Antigua in the winter, as are other tourists.

The city of St. Johns remains rather inferior in its facilities for accomodation. There is the ancient Kensington Hotel, a historic document in itself and the principal meeting place for mid-morning or mid-afternoon drinks, and there are several antique and amusing guest houses. But the face of St. Johns has experienced little lifting in recent decades.

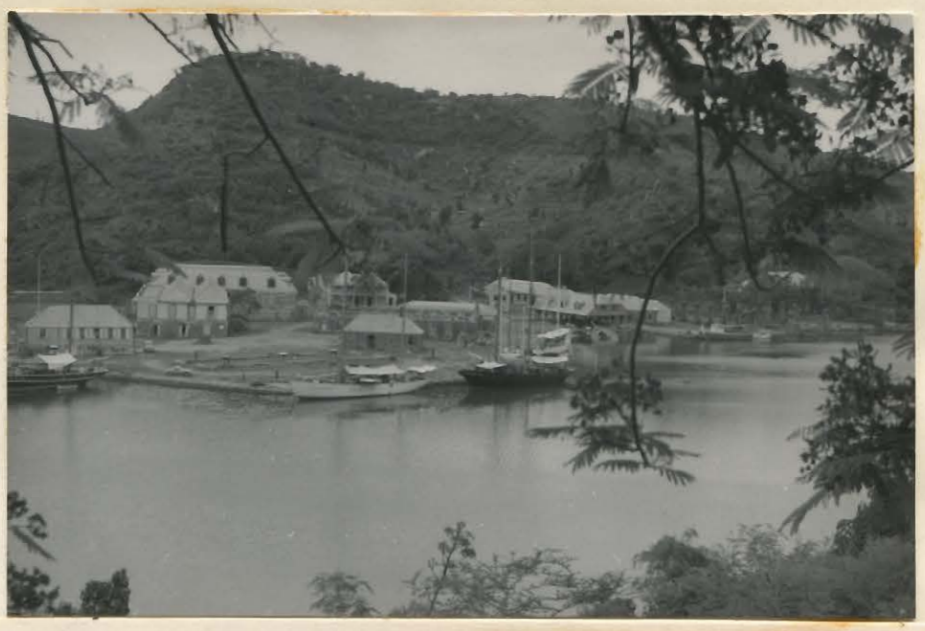

Fig. 50.--The Dockyard at English Harbour. Modern yachts now use the facilities of this historic harbour, where Nelson was stationed on the Boreas in 1787.

Fig. 51.--Capstans at English Harbour. These were used to careen the Royal Navy's warships before the age of steam. In the background is the galley.

Patrick Leigh Fermor wrote of St. Johns several years ago, "It was like a bone-yard, the bleached anatomy of a flat fish washed up among the sand dunes."[1] For tourists the attractions of Antigua are the climate, the countryside, the beaches and the sea, but not St. Johns.

Population

A remarkable change has occurred in the pattern of settlement since the emancipation of slaves, namely the movement of the population into villages (compare figures 52 and 53). In slavery days the people lived on the estates in quarters provided by the owners, for they were their property. Undoubtedly, as soon as a choice of domicile was given them the Negroes began to group themselves into village clusters or, in some cases, to move onto available hill land in the southwest. The villages of Augusta and Liberta originated soon after emancipation when a lady sold her property in small lots to Negroes. Presumably the poor sugar market in the last half of the century forced other estate owners to abandon their land, and, in some cases, it was sold for Negro settlement. The population curve shows that the number of white people declined steadily during the last quarter of the century (figure 54). As whites were forced off the land, Negroes took it up where possible.

As one drives through the Antigua countryside today, there is an impression of endless fields of sugar cane.

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[1]Patrick Leigh Fermor, The Traveller's Tree (London: John Murray, 1951), p. 205.

POPULATION 1844

Based on Oliver
and early maps.

Fig. 52

Scale in Miles
0 1 2 3 4 5

Total population 36,178

POPULATION 1946

Based on 1946 census
and contemporary map.

Fig. 53

Total population 40,778

In the central plain in particular there is little to suggest the fifty thousand people who are the island's inhabitants. The fields stretch on, but houses are seldom seen. The villages are often back from the main highway, hidden from immediate view, but nevertheless crowded with chickens, tin roofed huts, trouserless children and people of other ages.

In the southwest the road skirts the volcanic district, hugging the coast and connecting a string of small villages together. Jennings Village, Bolans, Crab Hill and Johnsons Point follow closely upon one another as one makes the circuit from St. Johns to Carlisle Bay. There is here, in contrast to the northeastern section of the island, a distinct impression of noise, gaiety and life.

The total population in the 1946 census was 40,778,[1] and of this number 10,965 people (or a quarter) lived in St. Johns, the capital city and principal port. Next to St. Johns in size was the town of All Saints with 1,544 people. The average density of population at that time was 378 per square mile, but this was not evenly distributed. In general, the west side was more crowded than the east, due to the slightly greater rainfall and also to the success of St. Johns in attracting most commercial activities. This city and the adjacent parish of the same name accounted for 21,582 people, or slightly more that half the island's population. Within that area, which is roughly a quarter of the island in size, the density of population was 717 per square

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[1]The population in 1960 is estimated at about 59,000.

mile, whereas the eastern parish of St. Philip had a density of only 183. In view of the superiority of St. Johns harbour over any others in the island, the growth of St. Johns and its adjacent regions is not surprising. St. John Parish continues to grow at the expense of the others, a trend towards urban settlement which is characteristic of most Caribbean territories.

The low rainfall of the eastern regions is without doubt another significant negative factor affecting population density. Between 1871 and 1946 the parishes of St. Philip, St Peter and St. George suffered a population decline, while the remaining three parishes became more crowded. It is surely no accident that the first three parishes are situated on the northeastern section of the island, which is most dry.

Antigua's population in 1946 was approximately the same size as it had been a little before 1800, except that the number of whites was much smaller. However, in the century and a half between these two peaks the population had dropped considerably. The most drastic decline was from 1890 to 1920 (see figure 54); in 1921 the total was only 28,864. Reasons for this are not clear, but the most commonly stated one is that a lack of economic opportunity in the Leeward Islands promoted emigration, either to other larger West Indian territories or to the United States. The trend reversed direction about the time of the 1929 depression, and during the last thirty years the population has risen at a faster rate than even before in history, chiefly due to a

large reduction in mortality rates. At present it is about 59,000.

The rapid and steady rise of the population curve since the 1921 census is rather foreboding. Because there is no evidence that the rate of growth will level off in the near future, it is foreseeable that a serious problem of overcrowding will result. Antigua may be another Barbados in a half century or so. The rate of growth of population throughout the West Indies is accelerating, due to the widening gap between a high fertility and a steadily dropping mortality rate. In Antigua the infant mortality rate has descended from 215.9 in the 1921-25 period to 88.0 in 1954[1] and 66.4 in 1957.[2] Another factor promising large increases in numbers is that a sizeable proportion of the population is young; in 1946 37% were less than fifteen years of age.[3] The population problem relates back to the land. Whereas increasing urbanization and the growth of miscellaneous small industries will tend to absorb more people, to what extent will domestic food production feed them? At the present time it is conceded that the government land settlement scheme has failed in its aim of expanding the growing of food crops. The population pressure will in time necessitate new attitudes towards both peasant agriculture and the sugar industry.

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[1]G.W. Roberts, "Some Demographic Considerations of West Indian Federation," Federation of the West Indies, Social and Economic Studies, Vol. VI, No. 2 (Kingston, Jamaica: Printers Ltd., 1957), p. 272.

[2]"Economic Conditions," p. 26.

[3]Census 1946, p. xviii.

VII. CONCLUSION

Factors affecting human activities

Antigua clearly demonstrates the effect which both relief and climate may have on human activities. There is a great contrast between the lowlands of the northeastern two-thirds of the island and the mountainous volcanic district of the southwest. The former supports the large-scale commercial agriculture, has the largest land units, possesses an efficient system of roads and sugar cane railways, and contains most of the population. The latter remains largely covered by a woodland vegetation, contains a small population which is mostly devoted to small subsistence farming and the grazing of cattle, and is most inaccessible.

The lowlands receive less rain than the volcanic district, and sugar production has always suffered from low yields and periodic droughts. In the coastal areas where even less rain falls, there is cotton raising or peasant agriculture. The low relief and the ease of travel are the principal advantages of the lowlands, combined with the proximity to the island's best harbour, St. Johns.

Greater rainfall is experienced in the volcanic district, but the land has been dissected sharply by erosion. Wooded hillsides descend steeply to the flat valley floors, where alluvial land supports agriculture. It is the steepness

of the slopes which is the main limiting factor for human activities in the southwest.

Situations and events far beyond the shores of the small island have always had great bearing on local affairs. The availability of capital in England, the adventurous spirit of merchants and settlers, the fluctuating demand for tropical products, wars, the sugar production of other areas, the philosophies of mercantilism and later of free trade, the European feeling against slavery, the use of beet sugar--all affected the social and economic character of Antigua.

The various external economic factors and attitudes of mind have been motivating forces acting upon the inhabitants of the island throughout its history. They have affected the activities of man within the geographical limits of the environment, at times pushing the utilization of resources to the very limit, or even slightly past the limit. The peak of the sugar culture, for instance, saw the steepest and most inaccessible land of the volcanic district under intensive use. At the time economics (namely the international demand for sugar) permitted this careless use of marginal land, but subsequent years have been marked by soil erosion and depletion of water resources caused by the deforestation and cultivation of those days. Nature suffered at the greedy hands of man in the eighteenth century, but that state of affairs soon reversed itself, to the detriment of succeeding generations. The boundary of plantation land had been pushed too far.

History has shown that man's activities strike a balance with the physical environment. Climate and relief are controlling factors in the use of the land. Although there is a more mature attitude towards the land today, there are still serious problems in land use. These problems are especially serious in the light of the steadily expanding population.

The population

There has always been a population problem of one kind or another on Antigua. In the beginning it consisted of a shortage of labour, and the solution was found in African slaves. Within fifty years of the settlement of the island slaves were more numerous than their white masters. Their steady rise in numbers brought uneasiness to the planters for the next century and a half. Since the abolition of slavery the white population has declined; the Negro numbers dropped also until 1921, but have risen remarkably since then. The problem today, in contrast to the seventeenth century, is one of overpopulation rather than shortage.

The change in racial composition since settlement could hardly be more ironic. In 1632 the inhabitants were all white Europeans; in 1946 the population was 85% Negroes of African descent, and the proportion of whites was less than 2% of the whole.

Outlook

The small island feeling in Antigua is less strong

today than in the past. Several factors contrive to break down traditional isolationist ideas and make the island more aware of broader issues. The first of these is the recent federation of British West Indian islands, which is awakening each territory to the fact that the future of the small and scattered Caribbean islands will depend upon cooperation and unity. In the second place, the recent emphasis on tourism is bringing a number of visitors to the island. This favours an exchange of information and ideas and creates a reliable dollar income. Thirdly, there is the importance of Antigua in a strategic sense. Its position in the outer defence arc for the Panama Canal is well known, and added to this there is its modern function as the most important missile tracking station on the 5,000 mile test range between Cape Canaveral, Florida, and Ascension Island.

POPULATION OF ANTIGUA 1632-1950

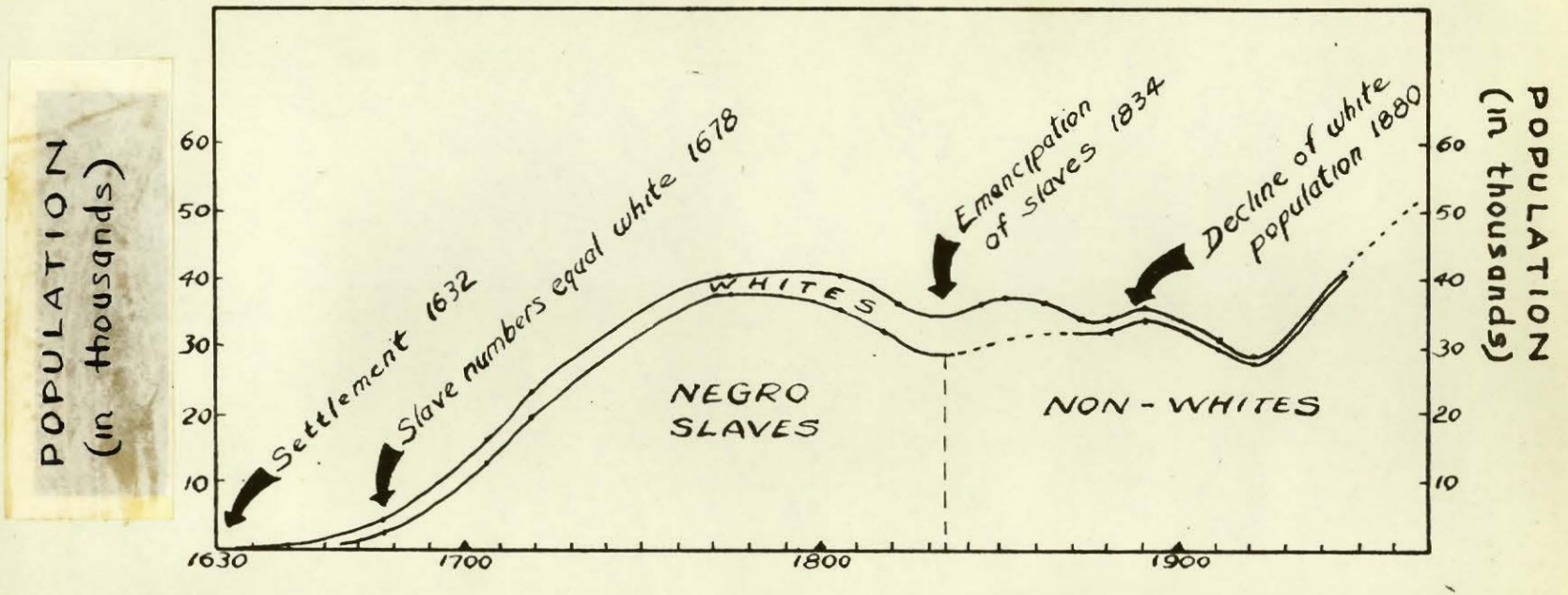

Fig. 54

APPENDIX I. TREE SPECIES OF ANTIGUA[a]

Local Name	Botanical Name
Spanish oak	Inga laurina
Loblolly (small leaf)	Pisonia fragrans
Mahoe	Daphnopsis caribaea
Mango	Mangifera indica
White cedar	Tabebuia pallida
Gunstock	Guazuma ulmifolia
Mountain parry	Linociera caribaea
	Casearia guianensis
Locust	Hymenaea courbaril
Red cedar	Cedrela mexicana
Star apple	Chrysophyllum argenteum
Wild tamarind	Leucaena glauca
Loblolly (large leaf)	Pisonia subcordata
White prickle	Fagara martinicensis
Wild cherry	Erythroxylum ovatum
Avocado pear	Persea americana
Wild fig	Ficus crassinervia
Spruce	Cordia alliodora
Milky bush	Tabernaemontana citrifolia
Sweetwood	Nectandra membranacea
Knottynave	Coccoloba pubescens
Black widow	Capparis cynophallophora
Genip	Melicocca bijuga
Logwood	Haematoxylum campechianum
Candlewood	Guettarda scabra
Yellow prickle	Fagara monophylla
Manjack	Cordia sulcata
Silk cotton	Ceiba occidentalis
Turpentine	Bursera simaruba
Shushel	Albizzia lebbeck
Hogplum	Spondias Mombin
Shoemaker bark	Byrsomina spicata
Man dogwood	Lonchocarpus latifolius
Lady dogwood	Lonchocarpus benthamianus
Coribee	Tecoma stans
Soapberry	Sapindus saponaria
Wild grape	Coccoloba venosa
Mahogany	Swietenia mahogani
"	Aegiphila martinicensis
Fiddlewood	Citharexylum spinosum

[a]These species were noted by Beard (pp. 158-62) in the volcanic district.

Chinkswood	Bourreria succulenta
Mast wood	Mastichodendron foetidissimum
	Myrcia citrifolia
	Piscidia piscipula
Guava	Psidium guajava
Palm	Coccothrinax barbadensis
Cabbage palm	Roystonea oleracea
Moca palm	Acrocomia karukerana
Sandbox	Hura crepitans
Whitewood	Buceras bucida
Angelin	Andira inermis
Fishing rod	Randia mitis
Ironwood	Exostema caribaeum
Calabash	Enallagma latifolia

APPENDIX II. SUGAR PRODUCTION

SUGAR PRODUCTION OF ANTIGUA FROM 1698 TO 1957[a]

Year	Tons	Year	Tons	Year	Tons
1698	2,242	1738	7,320	1776	9,848
1699	4,075	1739	9,688	1777	4,317
1700	2,639	1740	5,372	1778	5,447
1701	2,549	1741	6,633	1779	2,534
1702	2,912	1742	4,611	1780	1,783
1703	3,089	1743	7,303	1792	3,676
1704	2,247	1744	6,389	1800	5,882
1706	372	1745	6,160	1807	6,540
1707	4,530	1746	7,188	1809	4,992
1708	2,228	1747	3,104	1810	9,012
1709	3,243	1748	3,902	1814	6,982
1710	5,626	1749	8,767	1815	7,459
1711	2,834	1750	6,823	1816	9,634
1712	3,025	1751	6,564	1817	8,737
1713	6,460	1752	5,898	1818	11,170
1714	4,368	1753	12,459	1819	10,036
1715	5,473	1754	3,158	1820	7,842
1716	6,064	1755	10,645	1821	10,062
1717	6,784	1756	8,840	1822	5,005
1718	1,979	1757	11,238	1823	6,536
1719	5,705	1758	11,373	1824	10,788
1720	5,658	1759	5,147	1825	6,870
1721	2,147	1760	5,343	1826	11,838
1722	3,953	1761	9,698	1827	3,619
1723	7,468	1762	8,838	1828	8,592
1724	5,968	1763	6,398	1829	7,572
1725	7,471	1764	9,650	1830	7,931
1726	3,382	1765	4,585	1831	9,658
1728	9,362	1766	12,450	1832	7,166
1729	10,276	1767	12,513	1833	6,547
1730	9,114	1768	10,399	1834	12,353
1731	6,221	1769	6,762	1835	8,740
1732	6,533	1770	11,323	1836	6,784
1733	9,413	1771	5,608	1837	3,108
1734	4,233	1772	5,711	1838	10,152
1735	9,202	1773	4,044	1839	11,154
1736	7,455	1774	11,672	1840	10,153
1737	1,732	1775	12,530	1841	7,205

[a]The figures for the years 1698 to 1946 are taken from Deerr, I, , and those for the years 1949 to 1957 from the Annual Reports of the Antigua Sugar Factory, 1955 and 1957 (London: John Parry & Co., Ltd.).

SUGAR PRODUCTION--Continued

Year	Tons	Year	Tons	Year	Tons
1842	7,370	1880	9,500	1918	9,409
1843	8,670	1881	8,645	1919	12,481
1844	11,255	1882	12,769	1920	15,540
1845	10,500	1883	10,518	1921	9,365
1846	5,132	1884	13,721	1922	7,703
1847	12,012	1885	11,848	1923	11,395
1848	8,094	1886	12,271	1924	16,400
1849	9,449	1887	14,052	1925	17,300
1850	6,193	1888	14,925	1926	12,800
1851	10,011	1889	14,443	1927	23,301
1852	9,233	1890	16,120	1928	19,811
1853	10,120	1891	12,091	1929	10,045
1854	12,225	1892	15,302	1930	18,257
1855	10,992	1893	14,562	1931	5,202
1856	10,199	1894	12,342	1932	19,230
1857	10,190	1895	6,685	1933	23,875
1858	11,922	1896	13,744	1934	20,667
1859	9,835	1897	12,766	1935	16,072
1860	9,279	1898	6,968	1936	21,260
1861	8,182	1899	10,084	1937	22,225
1862	12,920	1900	7,622	1938	22,517
1863	10,124	1901	9,125	1939	14,113
1864	2,618	1902	12,611	1940	17,854
1865	7,906	1903	10,494	1941	21,979
1866	13,940	1904	13,904	1942	21,867
1867	5,641	1905	7,829	1943	16,279
1868	11,400	1906	13,328	1944	20,663
1869	9,406	1907	10,806	1945	26,023
1870	11,400	1908	13,451	1946	27,000
1871	11,900	1909	12,075	1949	18,263
1872	6,500	1910	13,145	1950	30,681
1873	8,700	1911	17,125	1951	18,511
1874	5,500	1912	10,187	1952	33,634
1875	13,300	1913	7,415	1953	31,588
1876	7,500	1914	15,345	1954	12,601
1877	9,100	1915	11,320	1955	19,836
1878	9,200	1916	18,542	1956	28,713
1879	9,200	1917	17,046	1957	31,985

APPENDIX III. SELECTED STATISTICS[1]

A. Population

GENERAL SUMMARY

	1953	1957
Population (thousands)	50	55
Birth rate per 1,000	34.5	32.0
Crude death rate per 1,000	12.2	9.3
Infant death rate (deaths under 1 year per 1,000 live births	93.6	66.4
Marriage rate per 1,000	4.1	4.0
Illegitimacy rate (illegimate live births per 100 live births	66.8	65.8
Natural increase of the population	2.2%	2.3%

PRINCIPAL CAUSES OF DEATH PER 100,000

Cardiovascular lesions including those of the central nervous system	246
Gastro-enteritis	55
Ill-defined diseases and those peculiar to infancy	39
Cancer	39
Bronchopneumonia	30
Senility	28
Tuberculosis	22
Avitaminosis and deficiency states	16
Maternal mortality per 1,000 live births	5

[1] "Economic Conditions," unless otherwise stated.

RACIAL GROUPS[a]

White	694
Black	34,919
Asiatic	80
Coloured	4,889
Not stated	196
Total	40,778

[a] Census 1946, p. xvi.

B. Transportation and communications

ROADS

Category	Miles
Main roads	62
First class byways	21
Second class byways	46
Third class byways	18
Total	147

VEHICLES

Motor vehicles of all descriptions	1736
Bicycles	3811
Animal drawn vehicles	115

SHIPPING ENTERED

Type	Number	Gross Tonnage	Av. Gross Tonnage per Vessel
Sailing vessels	183	4,914	26.9
Steamships	303	851,361	2809.7

AIR TRAFFIC

Lines operating	Pan American World Airways British West Indian Airways Air France Leeward Islands Air Transport Services Ltd.
Aircraft entered	2,163
Passengers entered	11,844

MASS COMMUNICATION

3 newspapers--the Antigua Star, the Workers' Voice (both dailies) and the Anvil (3 times weekly). Total circulation--at least 1500.

2 commercial cinemas--one at St. Johns and one at Parham--and a mobile government film unit.

Radio Antigua, begun in 1956, operates 4 hours a week. Estimated 1500 radio sets on the island.

C. Labour

PERCENTAGE OF WORKING FORCE IN EACH INDUSTRY GROUP[a]

Agriculture	42.92
Manufacture and repair	14.09
Personal services	13.95
Recreational, professional, public service	9.73
Trade and finance	6.91
Construction	5.64
Transport	2.94
Fishing	2.48
Forestry	0.24
Quarrying	0.02
Others	1.08

[a] Census 1946.

WAGES

Category	Daily Wage Rate
Gov't.:	
Unskilled, women and boys	BWI $1.57--2.16
" men	2.36--2.59
Semiskilled	2.91--3.45
Skilled	3.56--4.85
Non-gov't.:	
Labour	2.30--4.93

LABOUR UNIONS

Antigua Trade and Labour Union	14,683 members
Antigua United Port Seamen and General Workers' Union	450 "
Antigua Employers Federation	46 "

MIGRANT LABOUR

Emigrants	Destination	Purpose	Av. Length of Time	Sex
187	US Virgin Islands	agriculture	3 months	male
33	USA	"	3 years	"

D. Agriculture and Industry

CROP ACREAGES

Sugar	12,680
Cotton	3,275

INDUSTRIAL PRODUCTION VALUEZ

Sugar	BWI $6,203,700
Rum	94,000
Cotton	25,120
Crude cotton-seed oil	30,737
Refined cotton-seed oil	11,860
Cotton-seed cake and meal	44,437

E. Commerce

CHIEF IMPORTS

Commodity	Chief Country of Origin	Quantity	Value $BWI
Apparel	Hong Kong	--	187,350
Boots and shoes	U.K.	6,408 doz. pr.	206,217
Cotton piece goods	U.S.A.	563,298 yd.	300,131
Fish	Canada	1,079,216 lb.	356,923
Grains	"	13,060,070 lb.	1,298,931
Meats	U.S.A.	768,977 lb.	434,750
Nonedible oils	Trinidad	2,298,641 gal.	781,197
Wood and timber	Canada	1,287,676 bd. ft.	398,013
			3,963,512

CHIEF EXPORTS

Commodity	Destination	Quantity	Value
Sugar (tons)	U.K.	22,704.00	4,613,551
	Canada	7,647.78	1,554,479
Molasses (gal.)	Trinidad	789,660	78,966
	U.K.	320,480	32,048
	Montserrat	3,460	350
	Tortola	528	48
Cotton (lb.)	U.K.	476,529	568,812
	U.S.A.	84,300	29,128
	French W.I.	24,625	9,235
			6,886,617

F. Finance

Total revenue	BWI $7,434,920
Total expenditure	7,670,470

G. Education

SUMMARY

	Number of Schools	Number of Students	Number of Teachers	Av. Size of Class
Primary schools	32	12,242	339	36.1
Secondary schools	6	1,679	71	23.6
Total	38	13,921	410	33.9

ILLITERACY[a]

Age 10-14	2.4% of total population
Age 65 and over	25.2 " " "
Average of all age groups	13.3 " " "

[a] Census 1946.

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