BRITISH GUIANA

BRITISH EMPIRE EXHIBITION
WEMBLEY
1924

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INTRODUCTION

BRITISH GUIANA, the only British colony on the South American mainland, has an area of about 89,480 square miles, approximately equal to that of England, Scotland and Wales, and the population by the 1921 Census was estimated at 297,691, which gives an average of 3 1/3 per square mile.

In spite of being so near the equator the climate is more subtropical than tropical. For most months of the year the maximum shade temperature is about 85°F, and even in the hottest months 89°F is rarely recorded, while the night temperature seldom falls below 73°F or 74°F, a temperature of 70°F being very rare.There are two wet and two dry seasons in the coastland regions; the long wet season, usually from April to August, being succeeded by the long dry season up to the middle of November, followed by the wet weather towards the end of January, and the short dry season until April. The rainfall average is about 85 inches on the coastland belt, and 58 inches on the savannahs. In the forest regions of the interior the contrast between the wet and dry seasons is less marked than on the coast, the rainfall being more regular throughout the year. In the savannah region of the interior there is a well-marked dry season from October to February; while the wettest months are from May to August. It may be said also that the range of temperature is slightly greater in the forest regions than on the coastland region, and is even greater still on the savannah region; thus on the savannahs the main maximum shade registered is 92.5, while the main minimum shade is 72.2.

Fresh sea breezes blow steadily almost without intermission during the daytime for the greater part of the year; during the months of January, February and March they continue both night and day and make life, even for the European, exceedingly pleasant. The general direction of the wind is north-east, east-north-east or east. Occasionally, however, during the wet months of the year, a land-breeze is experienced from the south-east, south or south-west, and with this wind the heaviest falls of rain occur. The wind varies from “ gentle” to " fresh" and gales are exceedingly rare. Hurricanes are unknown.

The constant winds temper the heat of the tropical sun and keep the temperature inside the houses cool and pleasant. Visitors from other tropical countries frequently express surprise at the pleasantness of the climate. The nights, too, throughout the year are uniformly cool and conducive to sleep.

There are rarely twenty days in any year on which bright sunshine is not recorded. The daily average throughout the year is a little over six hours, but except when rain is falling, dull and cloudy weather is very rarely experienced. In the dry season the average record of sunshine is nearly ten hours per diem. Rain generally occurs during the early part of the day.

History. Guiana was the Indian name for the country between the two rivers Orinoco and Amazon, and was probably derived from the root word " winna" = " water" or "watery country." The coast was first seen by Columbus in 1498, but no Spanish voyager appears to have landed on the part now known as British Guiana. The inhabitants were numerous and consisted of three tribes, Caribs, Arrawaks and Warrows, the first two being continually at war with each other. The Caribs were noted cannibals and fighting men, and did not hesitate to raid the European settlements in the West Indian Islands in search of their favourite food - human flesh. It is probable that these tribes had driven out and taken the place of an earlier migration, probably from Mexico or Yucatan. In the latter half of the sixteenth century the story of EI Dorado incited many adventurers to explore the country, and in 1595 Sir Walter Raleigh went up the Orinoco in quest of the Gilded King and his wonderful city. English, Dutch and French traders followed.

In 1621 the Dutch West India Company received a charter by which it became possessed of Essequibo. Three years later a commander was sent to Fort Kyk-over-al, and at the same time a few settlers went to the Berbice river in the interest of the mercantile house of van Peere. In 1650 the Governor of Barbados founded a British colony on the Surinam river, and in 1657 a small Dutch settlement was made on the Pomeroon. In 1666, war having broken out between England and the Netherlands, both Kyk-over-al and Pomeroon were captured by an expedition from Barbados. In 1667 Surinam was exchanged for what is now New York, and most of the Pomeroon settlers went to what is now Dutch Guiana. Those were the days of raiders. A second settlement in the Pomeroon was destroyed by French corsairs in 1689; in 1708 Kyk-over-al submitted to pay a ransom to Captain Ferry, and in 1712 Berbice was held by Jaques Cassard as security for a bill of exchange.

Real colonization did not commence until the introduction of foreigners in the early years of the eighteenth century. In 1740, under Governor Storm van Gravesande, Essequibo was thrown open to all nations, with free land and ten years freedom from

taxes, and settlers began to arrive in considerable numbers. The seat of Government had been removed to Fort Island near the mouth of the Essequibo; a general move was made to the fertile coast lands, and permission was given to settle on the river Demerara.

Berbice, though far behind Essequibo, had become a real colony with a population of 346 whites and about 4,000 slaves, when, in 1763, a rising of the latter drove their masters from every plantation to take refuge at the mouth of the river. The revolt was not put down till nearly a year afterwards.

No real town existed in either colony. There were some houses near Fort Nassau, in Berbice, and Fort Zeelandia, in Essequibo, while in Demerara the Government officers were on a small island called Borsselen, about 15 miles up the river. In 1781 the colonies were captured by the British, who occupied them for ten months, and chose a site for a new town near the mouth of the Demerara. The French, acting as allies of the Netherlands, then ousted the English, and in 1784 the Dutch resumed possession, and called the new town Stabroek. It became Georgetown in 1812. New Amsterdam, in Berbice, was laid out about ten years later.

The capture of the colonies by the British and then by the French allies of the Netherlands upset the easy-going Dutch authorities, and resulted in a political crisis. The West Indian Company wanted to introduce changes which the colonists refused to allow. For two or three years no taxes could be collected; petitions against the Company were sent to the States-General, and in the end the renewal of its charter was refused. In 1791 Demerara and Essequibo came under State control, and a Plan of Redress, the basis of the present constitution, was formulated.
The troubles in Europe that followed the French Revolution were naturally reflected in the colonies. The Dutch and British became allies, but the Court of Policy in Demerara refusing to recognise this, nine English vessels arrived on the 27th of May, 1796, with a demand that the colony be placed under the protection of the British Government. Thus the two colonies of Demerara, Essequibo and Berbice became British for the first time. Restored to the Batavian Republic in 1802, they were again captured ten months afterwards, and finally transferred to Great Britain at the Great Peace of 1814-15 for certain monetary considerations to the tune of about three millions sterling.

The arrival of the British in 1796 was followed by a remarkable development of the colonies. Cotton, coffee and sugar were the main products, and high prices were realised. Slaves were imported to the number of about 5,000 a year, and everything looked bright, when the abolition of the slave trade in 1807 checked further development, and caused everyone to cry out for labour. Coffee and cotton gradually disappeared and sugar took their place. Labour was always inadequate, and gave rise to suggestions for immigration. A great rising of slaves took place in 1823 on the East Coast of Demerara. Suddenly emancipation became an impending fact. A system of apprenticeship was established for four years, and in 1838 the negroes became their own masters.

The chief danger to threaten the industry of late years was the Continental. Bounty system which encouraged the sale of sugar in England at a price much lower than the cost of production.

This handicap was removed in 1903, thanks to Mr. Joseph Chamberlain and the Brussels Convention. The general result of East Indian Immigration has been very good, and of late years the colony has enjoyed a fair measure of prosperity. The discovery of gold in paying quantities was made in 1880, and since that time the precious metal has furnished a considerable portion of the colony's revenue. Diamonds, too, have been found in considerable numbers, and rice-growing for export has undergone a remarkable development. Politically, the settlement of the Venezuelan boundary question in 1899,and the demarcation of the Brazilian boundary in 1906 have had a good effect. The tendency to closer trade relations with Canada - already the colony's chief market for sugar - promises much good. That British Guiana contains great possibilities is a truism; the full development of those possibilities has yet to be recorded.

Administration.- The existing Administration consists of the Governor, the Executive Council, the Court of Policy and the Combined Court.

The Governor is appointed by the Sovereign, and holds office during the Sovereign's pleasure. In him is vested exclusively the executive power, and he exercises direct supervision over the whole of the administrative departments.

The Executive Council consists of the Governor, the Colonial Secretary, the Attorney General, and such other persons as may be appointed from time to time by the Sovereign or are provisionally appointed by the Governor.

The Governor is President of the Council. The expression "Governor-in-Council" is defined under the law to mean " the Governor acting with but not necessarily in accordance with the advice of the Executive Council". The primary functions of the Council are to advise and assist the Governor for the time being in the administration of the Government. The Annual Estimates for the Combined Court are prepared by the Governor-in-Council. With the Council also rests the trial and suspension from office of Public Officers charged with misconduct.

The Court of Policy is now purely legislative, the executive functions which it formerly exercised having been transferred in 1891 to the Executive Council. It passes all Ordinances except the Annual Tax Ordinance and the Annual Customs Duties Ordinance, which are passed by the Combined Court. The power to legislate is derived from the Crown and is subject to veto by the Crown and to the power of the Crown to pass, by Order in Council. laws which cannot be altered by the authority of the Colonial legislature.

The Court of Policy consists of the Governor, seven official members and eight elective members. The official section includes the Colonial Secretary, the Attorney General, the Immigration Agent General, the Colonial Treasurer, and three other persons holding Public Offices in the colony, these being at the present time the Surgeon General, the Director of Public Works and the Commissioner of Lands and Mines. The elective members are chosen by the direct vote of the people. General elections are held every five years unless the Court is dissolved earlier. At least two Sessions of the Court must be held each year at less than eight months' interval. No Bill can be introduced without the sanction of the Governor.

The Combined Court means. " the Governor and Members of the Court of Policy with the Financial Representatives in Combined Court assembled." The powers possessed by the Court are the right to vote for the raising of Colony Taxes and to examine the Colonial Accounts; the right during the continuance of the Civil List to discuss the several items on the Annual Estimates of the colonial expenditure: and the right to move the reduction or striking off of any item on the Estimates not on the Civil List or secured by law.

The Financial Representatives are six in number and are elected in the same way as the elective members of the Court of Policy. Each holds office for five years

concurrently with the Members of the Court of Policy, and is eligible for re-election. There must be at least one meeting of the Combined Court in each year, and this is usually held in November or December to discuss the Annual Estimates and to raise taxes.

Every male person who possesses the following qualifications is entitled to be registered as a voter, and, being registered, to vote at the election of a member of the Court of Policy or of a Financial Representative :-

a) Has attained the age of 21 years; and
b) Is under no legal incapacity; and
c) Is a British subject by birth or naturalization; and
d) Has possessed within the District or Division within the six months previous to registration, certain property or income qualifications.

Judicial System.- Justice is administered by the Supreme Court, consisting of a chief. justice and two puisne judges, which has an original criminal and civil jurisdiction and hears appeals from the Courts of Stipendiary Magistrates both in civil and criminal matters. With some exceptions an appeal lies in civil matters as of right from any judgment or order of a single judge in actions where the amount claimed or the value of the property in respect of which the action is brought exceeds £52.1s. 8d. to the West Indian Court of Appeal. A judge may also reserve a question of criminal law for the consideration of this court.

Appeals from the West Indian Court of Appeal to His Majesty-in-Council are governed by the provisions of the Order in Council of February 7th, 1921. An appeal lies as of right when the matter in dispute on the appeal amounts to or is of the value of £300. The courts of Stipendiary Magistrates in the various districts dispose of minor civil and criminal matters, an appeal lying there from to the Full Court.

Up to January 1st, 1917, the Roman-Dutch Law was the common law of the colony. At that date the Civil Law of British Guiana came into operation. This ordinance purports to codify certain portions of the Roman-Dutch law, and in other matters to substitute the English common law and principles of equity, together with certain English statutory provisions, for the Roman-Dutch law. The criminal law of the colony is practically the same as that of Great Britain.

In this colony as elsewhere the legal profession is very much overcrowded. There are at present on the Roll of Court forty-nine barristers, of whom thirty are practising, and thirty-five solicitors, of whom twenty-eight are also practising in the colony.

Finances.-The revenue for the year 1923 amounted to £1,110,500, and the expenditure £1,050,921. The public debt at the end of 1922 amounted to £2,409,590*. Nearly 50 per cent. of the amount collected in taxation comes from import and export duties; a further 20 per cent. of the average is from excise on rum. There is no income tax. Customs duties average about 15 per cent. ad valorem, and a substantial preference is granted to the products and manufactures of Empire countries. Accounts are kept in dollars and cents at the rate of 4s. 2d. to the dollar. In addition to the English silver and copper money there are also in circulation four penny pieces, current only in British Guiana, and usually known as "bits." The Government issues notes to the value of $1 and $2, and other currencies are provided by the Colonial Bank and the Royal Bank of Canada in the form of $5, $20 and $100.

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* Figure for 1923 not available.

GEOGRAPHY

BRITISH GUIANA lies on the north-eastern coast of the continent of South America between parallels 1° to 8° North and meridians 57° to 61° West. It has a coast-line of about 270 miles extending almost from the eastern mouth of the river Orinoco to the river Courantyne. and is bounded on the North by the Atlantic Ocean, on the South and south-west by Brazil, on the East by Dutch Guiana, and on the north-west by Venezuela, It varies in depth (from the ocean southwards) from 540 miles on the western to 300 miles on the eastern side. The area is 89,480 square miles.

The Colony may be divided broadly into three belts, the northern one is a low-lying, flat and swampy strip of marine alluvium known as the coastal region, This rises gradually from the seaboard and extends inland for a distance varying from 10 to 40 miles.

It is succeeded by a broader and slightly elevated tract of country composed of sandy and clayey, practically sedentary soils. This belt is chiefly undulating land and is traversed in places by sand dunes rising from 50-180 feet above sea-level. The more elevated portion lies to the southward of the above-mentioned regions. It rises gradually to the south-west between the river valleys, which are in many parts swampy, and contains three principal mountain ranges, several irregularly distributed smaller ranges, and in the southern and eastern parts many isolated hills and mountains. The eastern portion is almost entirely forest-clad but on the south-western side there is an extensive area of flat grass-clad savannah elevated about 400-700 feet above sea-level. The country is traversed by many large rivers, which, with their numerous tributaries and branch streams form a vast network of waterways. All the larger rivers of the colony are impeded above the tide-way by numerous rapids, cataracts, and falls, which render the navigation of the upper reaches difficult.

In its scenery British Guiana affords very great contrasts. The tourist who visits the colony and confines himself to the flat and settled coast-lands leaves with the impression that British Guiana is merely a mud-flat not entirely above sea-level; but the traveller who penetrates any considerable distance into the vast interior must be greatly impressed by the tropical vegetation of lofty trees, tangled lianas and graceful palms, the hilly nature of the country, the many great ranges and curiously-shaped mountains, the elevated undulating plateaus, the extensive savannahs, and the

multitude of cataracts and waterfalls of surpassing beauty, which occur on the upper parts of the larger rivers and their tributaries.

The Coast-Lands.- The flat and comparatively narrow plain or belt which forms the coast-lands is to a considerable extent slightly below the level of ordinary spring tides which flood the unprotected parts. Inland it may rise to about 10 or 12 feet above high water mark and in depth it varies from 10 miles on the West to 40 miles along the Berbice and Courantyne rivers. Its margin is protected from sea and river by a dense growth of Mangrove *(Rhizophora Mangle)* and Courida *(Avicennia nitida).* Behind this growth are flat grassy savannahs mostly inundated during the rainy season.

It is along the outermost part of the coast-lands from the Pomeroon to the Courantyne that almost the whole of the population and cultivation of the colony are concentrated. Situated on this comparatively narrow strip are the two towns of the colony, nearly all the villages, and with but few exceptions all the sugar estates, roads and railways. Georgetown, the chief port and capital of British Guiana, lies at the mouth of the Demerara river on the East bank. New Amsterdam, the only other town, is situated 70 miles eastward some 5 miles up the East bank of the Berbice river. A standard gauge railway connects the two towns – a steam-ferry running from the terminus at Rosignol on the West bank of the Berbice river to New Amsterdam - and a short line constructed to a 3 ft. 6 in. gauge runs from Vreed-en-Hoop, on the West bank of the Demerara river opposite Georgetown, 18 1/4 miles along the West coast to Parika at the mouth of the Essequibo river. The drainage-naturally a most important point on the coastlands- is inter-tidal, *i.e.,* by the aid of sluices or kokers the water is discharged from the drainage canals during low tide and is kept out at high water, but in many cases during heavy weather steam pumps are also employed for this purpose.

The Sand and Clay Belt .-This lies behind the coast-lands and extends right across the breadth of the colony. Along the sloping front it is elevated about 50 feet above sea-level, and as it extends inland it rises in some places to hills of 180 to 200 feet in height. Here and there it is traversed by sand dunes. In width it varies considerably; in the North West district it ends at a distance of 40 to 50 miles from the ocean. The greater part of this belt is clothed with high forest containing a great variety of useful and valuable timber.

The Mountain Region. Behind the two belts just mentioned lies the Pakaraima Range, a mountainous region consisting of undulating plateaus rising successively at varying

distances one after another in bold sandstone escarpments from 1,200 to 2,000 feet high and cut in places into deep gorges of which the Kaieteur is pre-eminent for its size and beauty. The culminating point is reached in the flat-topped mountains Roraima and Kukenaam, which rise 5,000 feet above the surrounding country and 8,600 feet above the sea-level. In the Rupununi District the Kanuku mountains rise above a low-lying undulating savannah to an elevation of between 2,000 and 3,000 feet.

CHIEF RIVERS.

Essequibo River.- All the rivers flow into the Atlantic Ocean. The largest of them is the Essequibo, which, with its tributaries the Mazaruni, Cuyuni, Potaro, Siparuni and Rupununi, drains considerably more than half of the total area of the colony. Its total length is something over 600 miles. It is joined at Bartica by the Mazaruni, which is itself joined at Kartabo, 5 miles above Bartica, by the Cuyuni river. Kyk-over-al, an island off Kartabo Point, was the first important settlement made by the Dutch, and still retains traces of the old buildings. At Bartica the stream is about 3 1/2 miles across, while at its mouth the estuary of the Essequibo has a width of 14 miles and contains three great islands, the largest about 12 miles long. Ocean-going boats can proceed for some little distance above Bartica. Fort Island, some miles up the river, was once the seat of Government of the colony. On it there is a large Dutch church - formerly used as the Court of Policy Hall and the remains of an old fort. Above the first series of rapids on the Essequibo and opposite the lower end of Gluck island, a metre-gauge railway runs from Rockstone to Wismar on the Demerara river and thus affords easy access to Georgetown from the goldfields and balata districts situated in the upper regions of the Essequibo system.

The Courantyne River.- The Courantyne river ranks second in size amongst the rivers of the colony, of which its left bank forms the boundary. East Indians have taken kindly to the Courantyne river, and small farms extend at intervals along the banks as far as Orealla, some 52 miles from the river mouth. At that point hills, about 60 feet high, occur and continue southwards as far as Epera, about 35 miles along the bank above Orealla. Both at Orealla and Epera there are Indian reserves and Missions. Beyond Epera the Courantyne is quite uninhabited to its highest reaches. In the season balata-bleeders' boats go as far up as the mouth of the New River.

The Berbice River.- At its mouth, the Berbice river is divided into two channels by Crab Island, the width there being about three miles from bank to bank. The stream is navigable for large craft for a longer distance than any of the other rivers of the colony, the steamer terminus being some no miles from the sea. Beyond this point, in the dry season, the river becomes very shallow and much obstructed by sandbanks, but during the rains its course is uninterrupted as far up as Marlissa, about 165 miles from the mouth. Opposite New Amsterdam, on the western bank of the river, there is the railway terminus of Rosignol and the large sugar plantation of Blairmont, beyond which a public road extends for four miles up the river. Along the eastern bank another road runs for 25 miles above New Amsterdam. The banks for over five miles above the town are occupied by sugar plantations. There is also a solitary estate at Mara about 35 miles up the river. With these exceptions the low-lying banks of the lower Berbice river clothed with stunted trees and bordered along their muddy slopes by Mucca-mucca *(Montrichardia spp.)*and bush, continue unbroken on both sides for 50 miles to Bartica on the eastern bank of the river. There the land rises about IS feet above the water and the forest gives way to an open grass-clad stretch of savannah which commences at this .point and extends many miles above the ruins of the old Dutch fort and town of Nassau (the former capital of Berbice), about four miles above Bartica. At the Marlissa rapids. the surface of some of the larger granite rocks is carved with picture writings done in ancient days and resembling those of Timehri on the Courantyne and at Varaputa on the Essequibo river.
The Canje creek, which flows into the Berbice river just below New Amsterdam, is narrow but remarkably deep, and is navigable for 51 miles from its mouth. The forests through which it flows in its upper reaches are famous for their balata trees *(Mimusops globosa),* and in former days the Canje creek was the home of the balata industry. A good deal of bleeding is still done in the district .

The Demerara River.-Although commercially the most important and best known of all the rivers of the colony, yet compared with some of them, the Demerara is but a small stream. It has a length of only 200 miles, but the depth of water on the bar is sufficient to allow of large vessels crossing with ease and security. Consequently, Georgetown, the capital and principal port of British Guiana, has been established on its eastern bank at its mouth where the river has a width of about three-quarters of a mile, and furnishes a safe harbour.

The terminus of the colonial steamers which ascend the Demerara river daily is at Wismar, about 65 miles from the sea; but sailing vessels can be towed for 15 miles further up to load timber, large supplies of which have for many years been obtained and exported from the valuable forest country through which the river flows. Opposite Wismar is "McKenzie City," the headquarters of the Demerara Bauxite Coy., Ltd. From Wismar a railway runs across to Rockstone on the Essequibo river, and small launches run regularly twice a week to the foot of the Malalli rapids on the Demerara, about 104 miles from Georgetown, where the influence of the tide ends.

On the lower Demerara river, for a distance of nearly 20 miles from Georgetown, the low and flat lands on both sides of the river are extensively cultivated. There are several sugar plantations on both banks, Plantation Diamond on the right bank, about eight miles from Georgetown, being the largest in the colony. Public roads extend from Georgetown for distances of 23 1/2 miles along the eastern and 15 3/4 miles on the western bank. Borsselen, or " No.2 Island," situated about 20 miles from the mouth, is of interest, as on it, in 1753, the first capital of Demerara was laid out.

The Pomeroon River.-The Pomeroon river drains the portion of the colony lying between the Essequibo river and the upper Waini river. The low flat alluvial lands which form the banks of the lower river are among the most fertile in the colony, and a succession of well-drained and flourishing farms now extend as far as Makasima, about 36 miles from the Atlantic. The Pomeroon is navigable for steamers up to and beyond Makasima some miles beyond which the tidal influence ends.

The Waini River.- Throughout its whole course the Waini flows, entirely through forest-clad country. It has a width of about two miles at its mouth and is navigable for steamers for 56 miles up to the junction of the Barama river. The Mora passage – about seven miles in length - forms a deep and navigable waterway on the southern side of the Waini river, three miles from its mouth, through which steamers can pass into the Barima river at Morawhanna. The banks of the Barama river are flat and swampy and clothed with forest. Small launches are run during the rainy season, as far as the Towokaima falls, whence the Barima-Barama road passes through the Mazawini and Takutu goldfields to Arakaka on the Barima river, a distance of 29 miles.

The Barima River.-The Barima river gives access to the principal gold-bearing areas of the North-West District. About 52 miles from its mouth is Morawhanna, which, as just explained, can be reached from the Waini river by the Mora passage. Opposite Morawhanna resides the Commissioner of the North West District. The steamer terminus is at Morawhanna, but the river is navigable for the greater part of the year for another 125 miles. Launches ascend the now regularly to Arakaka, the centre of the gold bearing district. A Warden is stationed at this settlement, which was at one time of considerable size and importance. Smaller gold-digging settlements are to be found on the right bank of the Barima river, the furthest being" Five Stars" landing, about 170 miles from Morawhanna by river and 291 miles from Arakaka by land over the" Five Stars" Trail, constructed and maintained by Government.

KAIETEUR FALLS

KAIETEUR THE MAGNIFICENT.

THE following extracts describing a visit to the Kaieteur Falls one of the world's great natural wonders - are taken from an interesting article appearing in *Blackwood's Magazine* of November, 1917:-

At last the sun having already begun to sink below the edge of the plateau, we saw ahead, far up on the top of the now almost encircling escarpment, a faint line of bluff, partly hidden by an intervening buttress. It was the brink of Kaieteur. There, a thousand feet above, and nearly six miles away, the river we were paddling on fell from the edge of the plateau down a sheer cliff in a fall that dwarfs Niagara. Just a glimpse we caught, but it was so remote, so high, so far above us, that it seemed impossible to believe that there was any connection between that strip of water and the mighty river beneath us. Nevertheless we gained new vigour from the scene, and paddled on until our progress was barred by a cataract, and we disembarked to find a camping ground. On the morrow we set out for the climb to Kaieteur. A we climbed we could hear to our left a sullen roar that grew in volume as we ascended. It was a swelling significant roar of an avalanche, but continuous. It grew upon me as I pressed laboriously upward, it seemed to envelop my surroundings, to be about to engulf the jungle. Imagine, you who have had experience in the high mountains, the sound of never-ceasing avalanches, and you will have some idea of the terrible destructive power of which that roaring was significant.

The lower slopes were of rather friable sandstone, but as we neared the top we saw, strewn in titanic disorder through the jungle, great angular fragments of hard conglomerate filled with quartz pebbles the size of a man's fist. They were as large as a table in some cases, as large as a wagon in others, and lay upon the slope, supported by the trees and half clad with mosses. They were broken from the hard horizontal stratum that forms the summit of the plateau, and is responsible for the sharpness of the cliffs. The ever-active forces of erosion easily wear away the soft sandstone, but make little impression on the conglomerate until, undermined, it breaks off its own weight into angular masses.

Out upon this hard layer we stepped at last, after nearly two hours' climb. The top was bare so near the brink, for every bit of soil was carried away by constant rains. Only plants that need no subterraneous root can subsist on it-coarse, malformed, stunted plants that cling to it as ivy clings to a wall and live on rain and mist. The scene was hidden by a cloud that rested on the plateau, the cloud that had drenched us with rain as we ascended. We could see only a few yards ahead over an unprepossessing area, broken only by clumps of fantastic vegetation. Still the mighty roar, stronger than ever, rose from somewhere on the left. Tudor led me to a place where the plateau suddenly ceased. The roaring was louder than ever, and seemed everywhere, as though permeating the mist, which now rose in eddying clouds from beneath my feet.

Then the clouds began to lift. I saw a line of rushing yellowish water right in front, so surrounded by mist that it seemed fairly upon me. Slowly the clouds rolled away, and, like a curtain withdrawn, revealed the most awful scene I have ever witnessed. Here was a mighty river, pouring with a force that suggested terrible wrath, over a precipice over eight hundred feet high, down into which seemed unfathomable depths. A sense of unreasoning dread sought to force me from the eerie rock on which I stood. But so great was the fascination of this manifestation of a power so vast that it is as inexorable as fate, so great was its hidden influence, that it drew me forward. I gazed at the tossing waters and into the maelstrom below with eyes that could not turn away, and yet with a sickening sense of puny helplessness, an oppressive consciousness that I was standing in the presence of a power before which the boasted might of man is nought.

My point of vantage was a butting rock at the very summit of a wall of a mighty gorge, a sort of amphitheatre two miles or more across. In front and a little to the right I could see the distant mountains and the winding river that narrowed to dash in awful majesty over the brink of the gorge. There the water shows the rich walnut colour I have spoken of before, but it quickly changes to amber and becomes lighter and lighter as the rush through the air separates drop from drop. At the foot all is hidden by clouds of spray that rise in wild contortions, fly in all directions, and either rise through the heavy air, where the sunlight spans them with a brilliant rainbow, or cling to the sides of the gorge until precipitated on its moist sides, nourishing the mosses and air plants with which they are profusely clad. Below my feet was a seething cauldron, covered with kaleidoscopic films of foam, in which the waters gathered

themselves together for another rush over the cataracts that lead out of the gorge to the left.

The top of the fan is slightly re-entrant, and measured at the time of my visit four hundred feet across. The distance from there to the first obstruction is seven hundred and forty-one feet, while the total drop is eight hundred and twenty-two. It is therefore nearly five times as high as Niagara, but its finer proportions, its concentration, make it incomparably more grand. It is the perfect waterfall, the most beautiful manifestation of nature's lavishness and splendour.

As I gazed spellbound in the presence of that cataclysmic power, watching the ropes of water form and separate into columns of wind-blown spray, trying to realise what immeasurable masses were being tossed recklessly into the dark cauldron below, I noticed that the air was filled with swallows. They wheeled in flocks into the very edge of the abyss, darted almost into the falls themselves, soared overhead, and gathered in flocks of tiny specks hundreds of feet below between the mist-hung cliffs. At first I did not know whence they came, but soon I saw a few individuals disappear behind the solid wa1l of water. Then a whole flock followed, defiling as they went. Back under the falls I could see the outlines of a mighty cave, hollowed in the sandstone by the backwash of the waters. There the swa1lows nested. They were the guests as it were, the familiar spirits of the fall.

I moved away from my jutting rock, and reached a point nearer the brink. The speed of the rushing water was incalculable, and its depth, as it pitched forward for the awful plunge, must have exceeded twenty feet. One of my men tore one of the light pulpy plants from its hold on the rock and flung it into the water. The current caught it, raised it for a moment on the bosom of the river, and then hurled it far out beyond the fal1. I watched it spellbound as it fell through empty space down, down into the cloud of spray. It seemed an age before it was engulfed by the hungry waters, and I was conscious of a sensation of pain in every nerve. I seemed to suffer as though I myself were falling, and a feeling of horror passed over me as the rushing waters at my side seemed to be dashing me also into the abyss. I turned aside and saw the man tearing at another plant. Fiercely I called to him to cease, for I could not have endured such another sight.

Then I turned my eyes away from Kaieteur and looked down the valley, far away beyond the gorge. There was a far different scene. All was wrapped in peace as in a garment. The gleaming river showed in patches amid the jungle greenery, and above it rose the buttresses that border the plateau. There were no scenes of dynamic waste, no rugged lines, no abysmal drops, only gentle curves and tree-clad slopes, a fit setting for the chain of jewels that was the river. But ever present was the roar of Kaieteur, ever dominant the fierce, uncompromising tyrant of the jungle.

No wonder the red men look upon him as the great fetish, the God of waters, greatest of worldly forces. In the jungle it is the water that really dominates, not the sun as in desert lands. The forest owes its life to the never-ceasing rains, and all the jungle animals are water lovers. The rivers are the highways, the only means by which man may go from place to place. Therefore I could not help feeling that I had found in Kaieteur an expression of the great secret mystery of the jungle. "God of waters," the Indians call him. To me he was, as it were, the epitome of jungle Marvels.

POPULATION

ONE of the most interesting aspects of British Guiana is the cosmopolitan character of its population. Europeans, Portuguese from Madeira, Chinese, East Indians, Aboriginal Indians, and Negroes may be encountered at any time in Georgetown, and the coloured or mixed element between all, some, or any of the pure races is ubiquitous.

Strictly speaking, the only "natives" of British Guiana are the "Buck" Indians, or Aborigines. Europeans came next in order of time, and the negro slaves introduced by these followed. The sources from which the very mixed population of British Guiana has been drawn is given in the following, table :-

Number of Immigrants, classified according to Nationality, arriving From 1835 to 1921.

Whence	1835 to 1840	1841 to 1850	1851 to 1860	1861 to 1870	1871 to 1880–81	1881–82 to 1890–91	1891–92 to 1900–01	1901–02 to 1910–11	1911 to 1921	Totals
West Indian Is.	8,092	4,836	—	10,130	12,887	4,161	707	—	—	40,813
Madeira ..	429	16,744	9,587	1,533	2,170	182	—	—	—	30,645
East Indians..	406	11,841	23,381	38,715	53,327	38,851	39,473	23,769	9,216	238,979
Casuals ..	—	—	—	800	878	918	1,027	788	—	4,411
Azores ..	—	—	164	—	—	—	—	—	—	164
Africa ..	91	9,893	1,968	1,403	—	—	—	—	—	13,355
England ..	—	—	21	—	—	—	—	—	—	21
China.. ..	—	—	3,288	9,343	903	—	—	—	—	13,534
Cape de Verde	—	—	819	—	—	—	—	—	—	819
Malta.. ..	208	—	—	—	—	—	—	—	—	208
United States	70	—	—	—	—	—	—	—	—	70
Totals ..	9,296	43,314	39,228	61,924	70,165	44,112	41,207	24,557	9,216	343,019

It is estimated that the total number of Aborigines is 9,000, the majority of whom are to be found in the more remote parts of the Colony. These are not reckoned in the detailed figures given in the Census returns.

The population of the Colony at the taking of the 1921 census was 297,691, which shows an increase of 1,650 since 1911, the year of the previous census. Of this number, no less than 124,938, or 41.97 per cent., are East Indians.

The Influenza Epidemic in 1918 and 1919 which is stated to have been responsible for 12,000 deaths in the Colony, and the cessation of East Indian Immigration to the colony in 1917, almost entirely account for the smallness of the increase shown.

That the rate of increase in the population is largely determined by the single factor " Immigration" is seen on reference to the Census Reports, as during those decennia in which large increases are found, it is also seen that considerable immigration has taken place and large numbers have remained in the colony and conversely with a lesser immigration.

During the decade 1911 to 1921 the births exceeded the deaths in the Colony by only 34.

Distribution of the Population.- Of the total population, 22.84 per cent is resident in the towns. and 77.16 per cent. in the country. The people are distributed over the three Counties (into which the Colony is divided) as follows :-

Demerara	..	173,932	..	58.43 per cent.
Berbice	..	68,483	..	23.00 per cent
Essequibo	..	55,276	..	18.57 per cent

Georgetown, the capital, has a population of 59,624 or 20.03 per cent, of the total of the colony. This is made up of 54,439 from the City itself, and of 5.185 from the Suburbs. The increase during the past decade has been 2,047.

There are 8,363 persons resident in New Amsterdam. showing a. decrease of 241 since 1911.

RACES.

Races.-The number of each nationality or race comprising the population of the Colony is shown in the following summary ;-

Race Divisions	Number of Persons.		Percentage of total Population formed by each Race division		Percentage of each Race, 1921	
	in 1921	in 1911	in 1921	in 1911	Native-born	Foreign-born
Europeans, Northern Race ..	3,291	3,937	1·11	1·33	54·94	45·06
Europeans, Portuguese ..	9,175	10,084	3·08	3·40	87·25	12·75
East Indians	124,938	126,517	41·97	42·74	68·01	31·99
Chinese	2,722	2,622	·91	·89	86·19	13·81
Blacks and Africans	117,169	115,486	39·36	39·01	93·43	6·57
Mixed Races	30,587	30,251	10·28	10·22	92·04	7·96
Aborigines	9,150	6,901	3·07	2·33	100·00	—
Races not stated	659	243	·22	·08	—	100·00
	297,691	296,041	100·00	100·00	82·16	17·84

The proportions per 1,000 of the various races in each district of the Colony and in the two towns is given in the following table :-

District.	Europeans.	Portuguese.	East Indians.	Chinese.	Blacks and Africans.	Mixed Races.	Aborigines.
City of Georgetown ..	39	93	108	14	498	245	1
County of Demerara ..	4	21	529	8	365	55	11
Town of New Amsterdam	16	28	155	30	562	204	—
County of Berbice ..	3	4	579	5	341	52	15
County of Essequibo ..	4	13	393	6	371	86	125

Of the total population above 5 years of age 66.81 per cent. Was returned as "Occupied" and 33.19 per cent. as of no occupation.

The chief occupations were Agricultural 47.62 per cent, Industrial 28.38 per cent., Domestic 16.84 per cent., Commercial 4.37 per cent., and Professional 1.09 per cent.

Religion.-The Religions of the people were first scheduled in the 1911 Census, 95.32 per cent, of the population being then returned as professing some specified religion. In the present Census (1921) 61.71 per cent. of the population are returned as Christians, and 38.29 per cent. as non-Christians.

Of the Christians, 24.84 per cent. belong to the Anglican Church, 7.80 per cent. to the Roman Catholic, 5.15 per cent. to the Presbyterian, and 4.93 per cent. to the Wesleyans, while 16.42 per cent come under the head of "Other Denominations." These last comprise Congregationalists, Plymouth Brethren, Moravians, Canadian Presbyterians, African Methodists, Salvationists, Christian Mission, and Seventh Day Adventists.

Of the Non-Christians, 8,363 professed Hinduism, this being 76.29 per cent, of the East Indian population, and 32.62 per cent. of the total population of the Colony. The Mohammedans made up 16.15 per cent, and Parsees, 21 per cent. of the number of the Non-Christians.

THE ABORIGINES.

The Aborigines of British Guiana are widely scattered in many small groups or families all over the colony, and it is impossible to estimate the number of them even approximately. In the census of 1921 the Aboriginal population was returned at 9,700.

Compared with the ordinary European standard, all the" Buck" Indians are of small stature. The smooth and almost hairless skin varies in colour from a dark coppery brown to a light reddish yellow hue, The face is broad, the hair black and lank, the eyes dark and usually narrow, the neck short, and the whole countenance curiously resembles the Japanese type. The chest is deep, broad, and muscular, the legs and arms well shaped but somewhat thick, the hands and feet (especially those of the women) remarkably small.

The character of the ordinary Buck Indian in his natural state is a decidedly admirable and moral one. He is of a peaceful and amiable disposition, and readily responds to fair and just treatment. He is not" civilized," it is true, nor has he any desire to be, but he certainly does not deserve to be considered a savage.

The Buck Indians are usually willing to act as boat hands, carriers or guides. They cheerfully assist the traveller within the limits of their tribal district, but beyond these somewhat vague boundaries they seldom care to go. If much provoked or dissatisfied they control any animosity they may feel against the stranger who employs them, but they will quietly disappear, abandoning their wages and leaving the offending traveller stranded - a serious state of things in the far interior.

The native costume consists of a long strip of cloth or "lap" for the men and a tiny apron called a " queyu," made of seeds or beads, for the women. The men do not consider themselves decently dressed unless they have painted on their faces their tribal mark. On festive occasions they adorn themselves with feather crowns of various colours. Along the coast lands and in the more settled parts of the colony nearly all the Indians have now adopted European clothes.

The Principal Tribes.- The aborigines of the colony are divided into four distinct tribes, each speaking an entirely different language.

These are :-

1) The *Warraus* or Swamp Indians, found only on the low-lying coast-lands and around the mission stations near the coast. They are a timid people, very dirty, and particularly skilled in the making of "dug-outs" or corials.

2) The *Arawaks,* who live on the slightly elevated lands lying between the lower reaches of the rivers. They are most cleanly in their personal habits and more civilised than any of the other tribes. Nearly all of them can speak English; some of them also speak Spanish; while others have learned to read and write in both languages. They all wear European clothes and are excellent boat hands and expert wood-cutters.

3) The *Carib* tribe, which includes the true Caribs, the Arecunas, the Akawois, and the Macusis. The few remaining true Caribs are scattered over the country, mostly on the upper Barima, Barama, and Cuyuni Rivers. Their fighting propensities are historical.
The *Akawois* are born traders and are distributed chiefly over the forest-clad country round the Upper Mazaruni basin. They are generally good-humoured and easily amused at trifles.

The *Macusis,* a small tribe, are confined to the Savannah country between the lower Rupununi and the Ireng and Takutu rivers. Of all the Indian tribes they present the handsomest appearance and have the most pleasing manners. They are the chief makers of the famous " wourali" poison, experts in the use of the blow-pipe, keen huntsmen, and are generally of a sporting disposition.

4) The *Wapisiana* tribe which inhabits the Savannah country around the upper reaches of the Rupununi and the Takutu Rivers. They are the great traders of the southernmost parts of the colony and the canoe makers of the interior. They have. a somewhat taciturn nature combined with much decision of character.

Some isolated tribes are to he found in the little explored portions of the colony to the extreme South and East. Of these very little is known, and they cannot therefore be classified; but the Wai-Wais, located around the head waters of the Essequibo river, are famous for their trained hunting dogs and their ornamental feather work.

The Indian dwellings may be divided into two types :-

(1) The Forest type or *Benab,* rectangular in shape with open sides and sloping roof, thatched with palm leaves and almost touching the ground.
(2) The *Savannah house,* invariably round or oval shaped, with a high conical roof thatched with palm leaves and resting on a low wall built of wattle and plastered with kneaded clay.

Protection of Indians.- The care of the Aboriginal Indians throughout the colony is vested in the Commissioner of Lands and Mines as Chief Protector of Indians under the Aboriginal Indians Protection Ordinance No. 28 of 1910, and all District Officers of that Department are Sub-Protectors of Indians under the Ordinance.

Every person desiring to employ Aboriginal Indians must obtain a permit to do so from a Sub-Protector and sign a Memorandum of Agreement as to wages and conditions of service; these permits are issued free of charge.

In cases where it is desired to employ Indians in remote parts of the interior where no Sub-Protector is stationed the employers must first obtain a permit from the Protector of Indians in Georgetown to employ a stated maximum number of Indians, without naming them, and either deposit with the Protector a sum of $25 as security

for each Indian, or enter into a Bond with approved surety for the due payment of their wages.

The Protector and Sub-Protectors have power to sue for and recover on behalf of any Aboriginal Indian any money due for wages, goods sold, etc.

Indian Reservations.- The areas set apart as Reserves for the Aboriginal natives of the colony are ten in number, as follows :-

No.				
1.	Moruka Reserve	containing	..	305 square miles.
2.	Wakapau . .	"	..	18 " "
3.	Upper Pomeroon	"	..	262 " "
4.	Ituribisi Creek	"	..	65 " "
5.	Vlissengen	"	..	1. 5 " "
6.	Muritaro	"	..	.25 " "
7.	Wikki Creek	"	..	95 " "
8.	Orealla	"	..	54 " "
9.	Epira	"	..	52 " "
10.	Rupununi	"	..	442 " "

Rights of Indians over Crown Lands.- All Aboriginal Indians have the right to travel, hunt and fish over the unlicensed Crown lands of the Colony and its rivers and may dwell on and cultivate such lands. They are also permitted to cut and sell timber from the unlicensed Crown lands but must first obtain a permit, issued free of charge by Sub-Protectors and" Authorities" created for the purpose.

Sales of timber so cut are conducted by the Department of Lands and Mines on behalf of the Indians wherever practicable so as to ensure that they are fairly dealt with.

IMMIGRATION.

Tropical agriculture depends for its success upon its labour supply, and British Guiana has been no exception to this rule. In the early days the value of an estate was very largely the value of the slaves upon it; so much so that this formed the most

convenient criterion for taxation purposes. The West has never had the teeming populations of the East; and when in 1814, the slave trade was abolished by the British Parliament the troubles of the planters of British Guiana began to grow acute. The importation of slaves stopped; the working population rapidly decreased; until in 1834 the Emancipation of the slaves brought matters to a crisis. Continuous and steady work was what the planter required and this was just the thing the free negro was incapable of giving. The planters, faced with ruin, had recourse to immigration; and the history of the development of this system from its first crude efforts, through its many and sometimes almost fatal mistakes to a system which has justly been described as a model one and to its final abolition in deference to native political opposition to emigration of Indians for labour purposes makes an interesting study. Incidentally the sixty odd years of immigration have gained for British Guiana a polyglot population, consisting of large numbers of Portuguese and natives of Madeira, who have managed to get into their hands the bulk of the retail trade of the colony, rivaled in a small way by a fair sprinkling of Chinese; a much larger number of Africans who as schoolmasters, sick-nurses, artisans, porters, gold and diamond diggers and balata bleeders fill an important part in the economy of the colony; and a greater number still of the natives of India, who with their love of land and fondness for agricultural and pastoral pursuits will probably, if their numbers are sustained, have a greater influence on the future of the colony than all the other races put together.

Difficulties of the Planters. It must always be remembered that immigration was forced upon the planter by dire necessity, and was carried out by private enterprise. The British West Indies and Madeira appear to have been the fields previously exploited. In 1835, the first date on the record, 157 persons from the former and 429 from the latter arrived in the colony. In 1838 India and Africa were drawn upon, and in the next couple of years Malta and even the United States contributed their quota. The old-time planters were not afraid of making experiments, and certainly they had to learn from bitter experience. Always they had to reckon with the "Anti-Slavery Society" in England, which insisted upon regarding immigration as a "new species of slave trade," and wielded a political influence powerful enough to stop the arrangements absolutely in certain directions for several years.

In 1839 the situation had become desperate. Immigration from India was prohibited; immigration from Africa was embarrassed with vexatious restrictions; immigrants from other countries, obtained with great trouble, were found unsuitable for the most

part, and in case of the exceptions there was no law to enforce the performance of their engagements. These difficulties culminated in 1840 in a deadlock between the Government and the elective section of the Combined Court, when the latter declined to grant a new Civil List unless free immigration from all parts of the world was guaranteed. This unfortunate state of things lasted till January, 1841.
An arrangement was then come to, the Civil List was voted and an Ordinance passed providing funds from the revenue of the colony" for encouraging the introduction of labourers in husbandry,"
creating a Board of Commissioners for the management of these funds and the payment of bounties for immigrants; and appointing an Agent General for Immigration, Emigration Agents, and an Immigration Agent for Berbice.

Improvements in the System.- Up to this point (1841) solely by the enterprise and energy of private individuals, at their own expense and risk, and in spite of difficulties and obstacles, 9,160 labourers had been introduced. The law, however, was still found unsatisfactory and inadequate, and in 1843 another Ordinance was passed - the first to receive the approval of the Home Government.
It placed the management of immigration from Africa in the hands of Her Majesty's Government; guaranteed to the immigrants return passages to their native lands; and provided for contracts of service for periods not exceeding one year, terminable on three months' notice. The year 1843 was also marked by the departure of two ships for India carrying back 235 of the 406 immigrants who had arrived in 1838. These were the first return ships. The confirmation of this privilege induced the Secretary of State to withdraw the prohibition against immigration from India, and five thousand emigrants were at once applied for and the necessary financial arrangements made. But the difficulties of employers were far from ended. They had a good field for recruiting labour, it is true, and they could induce labourers to emigrate; but could they make them work? The Home Government would tolerate no interference with the liberty of the subject to dispose of his labour as he pleased; consequently the immigrants wandered about from estate to estate begging or working as they felt inclined, and the mortality amongst them was very great.

Two new Ordinances now made their appearance; one in 1847 defining the mutual obligations of employer and employed in respect of medicines and medical attendance, and regulating the management of rural hospitals; and a second in 1848 which fixed the indenture period at three years, and provided that no portion of an immigrant's stay in the colony should be reckoned as part of the five years' industrial

residence required of the immigrant to entitle him to free return passage to India, unless during that time he had worked under a written contract with some planter, or paid a monthly tax instead. But these remedial measures came too late; the “Anti-Slavery Society" was at work again; and again immigration from India was stopped.

The Chinese Immigrants.-The influx of labourers from the British West Indies ceased in 1846, but the scarcity thus caused was somewhat neutralised by numerous arrivals from Madeira, where famine was raging. From 1850 onwards, immigration from Africa began to fall off and recourse was had to China, whence the first immigrant ships arrived in 1853. The new importations proved very satisfactory labourers, and most of them engaged in a second and even a third term of indenture, which was increased by Ordinance in 1862. Chinese immigration continued steadily till 1866, when 10,984 had been introduced. The women among them, although bound to reside on the estate, were under no obligation to work - a precedent followed in the subsequent three years system with regard to East Indian women. Meanwhile, little by little, as experience was gained, the law continued to be amplified, altered and consolidated. Hardly a year passed but had its Ordinance for the encouragement of immigration. In the year 1851 the Immigration Agent General was invested by law with the privilege of entering any estate for the purpose of enquiring into immigrants' complaints; in 1864 the Governor was empowered to order the removal of all or any of the immigrants from an estate if he considered such a measure to be in the interest of the people, and the Immigration Agent General was authorised to prefer complaints before the magistrate on behalf of the immigrants. The Immigration Agents resided in Georgetown and visited estates only half-yearly, or on special complaints; but the medical officers, appointed and paid by the owners of plantations, were independent of the Governor and the Immigration authorities, and there were those who said that the people did not get the benefit that the law was designed to effect.

The Des Vaux Inquiry.- August,1870, saw the famous inquiry into the immigration system which followed on the serious allegations made by a former magistrate in British Guiana. Mr. (afterwards Sir) G. W. des Vaux. The report of the Commission, while pointing out certain defects in the system, was generally satisfactory, vindicated the Magistracy and the medical officers, and acknowledged the fair dealing and kindness of the managers towards immigrants. In accordance with the recommendations of the Commission a new Ordinance was drafted and came into force in 1873. Soon afterwards the powers of the Immigration Agent General were much increased by the formation of Immigration Districts, each in charge of a resident

Agent and by his being appointed Secretary to the Governor in immigration affairs and member *ex officio* of the Court of Policy. In 1882 state-aided immigration from Madeira was brought to an end, and three years later the same fate befell immigration from the West Indies. In 1887 the medical care of the immigrants was placed under the charge of the Medical Department. which had just been formed.
The year 1891 saw a further revision and consolidation of the laws into one - No. 21 of 1891 - which, however, did not receive His Majesty's consent until after the receipt by the Indian Government of a special report on the treatment of their subjects in British and foreign colonies.

Return Passages and Land Settlements.- The right to return passages after a stated period was early secured by law to the immigrants, and though it has proved a heavy financial burden and constant source of wastage of potential population to the Colony, there seems to be no way of avoiding it in cases where emigration is only possible with the concurrence of the State or Government from which immigrants are sought. In an effort to reduce the wastage caused by the departure of emigrants who had no real desire to leave the Colony, but felt it incumbent on them to exercise the privilege of doing so, to which they were entitled by law, reward grants of land were offered in lieu of back passages, settlements were laid out at Helena on the East Coast, Demerara, Bush Lot on the West Coast of Berbice, Whim on the Courantyne Coast and Huis't Dieren on the Essequibo Coast, where immigration and drainage facilities existed, and the lands were eagerly taken up by Indian immigrants who had become entitled to back passages. But the organisation and control necessary to carry the scheme to success appears to have been lacking, and it ended in disappointment and dissatisfaction, though the settlements so formed still exist as Indian holdings administered by themselves under the *aegis* of the Local Government Board.
But it may be mentioned that settlements comparatively recently formed at Windsor Forest, La Jalousie and Hague on the West Coast of Demerara independently of the question of back passage, whereby the land was leased to Indians at a fixed rental inclusive of all barges for sea-defences, irrigation, drainage and general upkeep of roads, trenches, etc., all of which are controlled by the Government, have proved entirely satisfactory to the lessees, and are now practically self-supporting. However, the unrestricted right to free passages after a fixed period of indenture was reverted to, but as time went on and the immigration system became more stable and widely known it was decided that the terms of the law in that respect might be relaxed in order to deter unnecessary and ill-considered exercise of the right to return. Accordingly, in 1895, the male immigrant was required to pay one-fourth of the

cost of his return passage and the female one-sixth. In 1898 these proportions were increased to one-half and one-third respectively, and those rates remained in force until the cessation of indentured immigration in 1917.

Cessation of Indian Immigration .- From 1885 onwards the Colony depended entirely on immigration from India for increase of its agricultural population; but for years prior to its cessation in 1917, native public opinion in India was being influenced against emigration in general and indentured emigration in particular, with its consequent loss of caste and, in the latter case, alleged injury to India's national dignity and pride.

In 1913 Mr. James McNeill of the Indian Civil Service, and Mr. Lala Chimanlal, a nephew of Rai Nathimal Bahadur, commercial representative in the Legislative Council of the United Provinces of Agra and Oudh, and himself a trader of Khurja in the United Provinces and a member of a firm owning cotton mills, gins and presses in various parts of India and doing large businesses in the sale of produce, visited British Guiana (and other Colonies with which this resume is not concerned) to report to the Government of India upon the conditions of life of the Indian immigrants in the Colonies and to submit recommendations considered desirable to promote their welfare. But although the result was favourable to this Colony, where Indians comprise about 45 per cent. of the entire population of the Colony; where they enjoy equal rights and privileges with all other British subjects, with unrestricted individual rights so far as religion is concerned; where Indians and their local-born descendants are to be found in all the professional, industrial, agricultural and commercial ranks of life; and where they participate freely in the municipal and political life of the Colony- native public opinion in India had become so adverse to emigration of Indians for labour purposes, that the Government of India eventually decided to terminate the existing system of emigration and the influx of Indian immigrants into this Colony ceased altogether in 1917.

The Colony was thus once more faced not only with a labour shortage, but what was far more serious, a diminishing Indian population on which the agricultural resources of the Colony, both capitalistic and peasant-proprietary almost entirely depended. Owing to the fact that the proportion of male immigrants has always been largely in excess of female, resulting in great disparity in the respective numbers of the sexes, the births are considerably below the losses by death and repatriation. Moreover, every year that passes sees large numbers of immigrants whose labour was available

to the staple industries, becoming land owners and traders who in their turn become employers of labour, and though this is a matter for congratulation as indicative of the thrift of the immigrant and the opportunities for success offered to him by this Colony, it is obvious that unless their places can be filled by other immigrants or by natural increase of population, the point at which deadlock will be reached cannot be far distant. The census of 1921 showed a decrease in Indian population since the 1911 census of 1,579, and repatriation still continues. A census of those who have stepped out of the ranks of labour in those of independence and comparative affluence would probably be more startling though in some respects it would be the best advertisement the Colony could desire.

Efforts to Revive Immigration. - In 1919 the Attorney General, the Hon. Dr. Nunan, K.C., LL.D., conferred with the Sugar Planters' Association, the Chamber of Commerce, the Royal Agricultural and Commercial Society and other public bodies in the Colony with a view to resumption of immigration by the introduction of families who would be free to labour for others or to settle on land made available for the purpose on sugar estates and on drained and irrigated Government Settlements prepared for their accommodation in the vicinity of those estates, where if they so desired they could obtain remunerative employment between periods of planting and reaping of their crops. A Colonisation Scheme was drawn up and approved by all concerned and measures taken to provide funds for an annual influx of 5,000 families from India and in November, 1919, a deputation consisting of the Attorney General and Mr. Thomas Greenwood, the latter as representative of the West India Committee, Dr. Wharton and Messrs. Luckhoo, Barrister-at-Law, and Parbhu Sawh, Merchant, representing the East Indian Section of the community, visited India and laid the proposals before the Indian Government, and certain leaders of native Indian political opinion and the Indian press. They were also heard by a select Committee of the Imperial Legislative Council. The reception of these proposals was very encouraging, but definite decision in the matter was deferred pending a visit to the Colony by representatives of native Indian political associations who would be able to satisfy themselves on behalf of their compatriots as to the genuineness of the offers then made.

In 1922 a deputation consisting of Mr. E. F. Keatinge, C.LE., LC.S., late Director of Agriculturc, Bombay, Diwan Bahadur Kishava Pillai, Deputy-President of the Madras Legislative Council, and Mr. Ventkatisa Narayan Tevary, of the Servants of

India Society, visited the Colony and mixed freely amongst the Indian community of all grades.

Their report has not yet been published.

At the end of 1923, at the instance of the Sugar Planters' Association, the question of Immigration from India was again revived, and after deliberations in the Combined Court and various meetings with representatives of the East Indians and others, it was decided to send a deputation consisting as before of Messrs. Nunan and Luckhoo, with the addition of two Indian Delegates selected by the British Guiana East Indian Association. The two leaders of the mission left the colony on November 23rd, 1923, and after consultation with the Colonial India Office, proceeded to India. The result of the mission is not yet known.

That the immigrant from India is the best class of colonist for British Guiana is now beyond question. That he can and does prosper exceedingly and rise to the highest positions in the Colony has been amply proved. It rests now with India to say whether this Colony is to continue as an outlet for such of her population as is desirous of going afield, where their advent will be welcomed by the Government, the Colony in general and their own kith and kin resident in the Colony, or whether the 124,000 odd Indians now here are to dwindle and eventually be absorbed by other nationalities for lack of the influx of their own people which is necessary to preserve the racial purity and national traditions.

CENTRES OF POPULATION.

Georgetown. Georgetown, the capital of British Guiana, the seat of Government and the chief port of entry for the Colony, is situated at the mouth of the Demerara River on the right bank, its position (taken at the Post Office) being 6° 48' 48" N. latitude, and 58° 9' 52.5" W. longitude, giving a difference of 3 h. 52 m 39.5 sec. behind Greenwich time. The Official time for the Colony has since been made 3h. 45m. later than Greenwich mean time.

The City was so named in the year 1812 after the Prince Regent; obtained a Corporation by Ordinance in 1837; and about the same time - with the establishment of the Bishopric of Guiana and of the Cathedral of St. George - it was constituted a City.

At the census of 1921 the population was returned at 59, 624, or 20.03 per cent. of the total population of the Colony, and may be described as a very mixed one. It consists of Europeans of various nationalities, mostly British and Portuguese; Negroes, East Indians, Chinese, a few Aboriginal (Buck) Indians from the interior, and people of mixed race of all shades, either native born or from one or other of the West Indian Islands; this population, cosmopolitan though it is, forms a quiet and law-abiding body of citizens.

The City is governed by a Mayor and Town Council and for administrative purposes is divided into nine wards, for each of which a Councillor is elected. In addition to these elected Councillors, there are three Councillors nominated by the Governor-in-Council. The number of registered voters in 1921 was 977.

The revenue of the Council is derived from a tax on the appraised valuation of lands and houses within the municipal boundaries, and from market fees, water rates, and so on. The rate of taxation during 1921 was 3 per cent. with a surtax of 15 per cent. on a total property valuation of $10,783,185. A Medical Officer of Health is responsible for the hygiene of the City; a City Engineer for the roads, drainage works, etc.

The land on which Georgetown stands, in common with the rest of the Coastlands of the Colony, is an alluvial flat some four and a half feet below high water at Spring tides and the drainage of the City being a gravity one is therefore inter-tidal; the sluice gates or “Kokers,” to which the open canals that store and carry off the drainage water lead, being opened on a falling tide and shut again when the tide rises to the height of the outfall water. The fact of the land being below sea level makes a pipe system of sewage disposal a difficult and costly matter and action in that direction has been unduly delayed in consequence. Modern Science and education of the people in matters of hygiene have at last prevailed, however, and the work of installing a pipe-line sewage system leading to sumps in various parts of the City from which the sewage will in turn be ejected by electrically operated pumps and eventually discharged into the Demerara river at suitable outflow points, has now been started.

The water supply of the City is of a two-fold nature: "Bushwater," which is the local name for water which is conserved in rear of the sugar estates for irrigation and general agricultural purposes, is led into the City by the Lamaha Canal at the extremity of which (at Camp Street) is situate the" Water Works." Here the bush-

water is pumped into the street mains to the amount of about six million gallons daily. This water is of a brown colour owing to the peaty character of the land from which it is derived and as there is no purifying plant the water is only used for street watering, manufactures, fire extinguishing and rough domestic purposes. Drinking water is supplied by the storage of rain water in large vats and tanks which are compulsorily erected on all private premises and have to be screened to prevent the breeding of mosquitoes therein. In addition to the private vats, the Municipality has large storage tanks some of which are of a capacity of one million gallons, attached to the principal public buildings,
churches, etc. from which rain water is sold by ticket at a cheap rate. A comprehensive scheme to supply the City with pure water from a system of artesian wells is now under consideration.

As the visitor approaches Georgetown from the sea he first passes the lightship which is anchored some ten miles from the land in five fathoms of water. The fairway, which is marked by buoys, shallows to nineteen feet on the bat at springtide high water. The entrance to the river is marked by the lighthouse, a brick building one hundred and three feet high, painted red and white in vertical stripes and showing at night a strong revolving white light flashing once every minute and said to be visible in clear weather for a distance of over twenty miles. At the junction of the right bank of the river and the Sea Wall stands Fort William Frederick, which used to mount twenty-one muzzle loading guns - still used for saluting purposes-but has now some modem guns which command the entrance to the harbour. Inside the river there is ample anchorage, with a depth of water of thirty feet at springtides - the extreme rise and fall being ten feet. In the stream the current runs at a speed of three or four knots per hour.

Adjoining the fort is a breakwater recently constructed by the Harbour Board and designed as a nucleus of a river wall or continuous wharf which .may eventually replace the long series of wooden wharves or " stellings " which extend along the river bank southwards to La Penitence.

The City has all modem conveniences, - electric cars and lighting, attractive shops, business places, wide streets and fine private residences surrounded with a glowing wealth of coloured flowers and a luxuriant growth of vegetation. Many of the streets are triple, consisting of two vehicular roads and a central pedestrian avenue between

grass borders, and shaded by ornamental trees, which remove any misleading impressions created by the river frontage.

Owing to Georgetown being below sea-level the townspeople had many a struggle with the encroachments of the sea and tidal river water in days gone by and it was not until the Sea Wall was completed in 1882, after thirty years' work, that the trouble was overcome. This sea wall forms a breezy esplanade extending for a mile and a half along the ocean frontage to Kitty Village, where it is joined by a recently erected sea wall of reinforced concrete which extends along the coast for many miles. The clean sands which have accumulated at the western end of the Georgetown-Kitty Sea Wall, make a favourite playground for children. One of the band-stands of the town is situated on the Sea Wall-the other two are in the Botanic Gardens and the Promenade Gardens. An excellent and well-trained military band attached to the British Guiana Militia plays between five and six o'clock p.m. on certain days of the week and on some Sundays, on the Sea Wall and in these Gardens.

One terminus of the tram-line is near the band-stand on the Sea Wall: the other end of the Sea Wall line-will be found a few hundred yards along the wall towards Kitty.

Georgetown has two large up-to-date Cinematograph theatres situated at central sites and a large and well kept race course- Bel Air Park, where four race meetings are held annually, is within very easy reach of the car line.

New Amsterdam. At the mouth of the Berbice river and on its right bank in latitude 6' 17' 00" North, and longitude 57' 33' 02" West, stands the town of New Amsterdam, the capital of the county of Berbice. It covers an area of 662 acres including the historically interesting Winkel village, and some farm lands known as Vryman's Erven. Its population as disclosed in the 1921census is just under 8,000 souls. A bird's eye view of the town shows it to be like Georgetown, embowered in foliage. The town, with some twelve miles of road, is well laid out and drained, and possesses an electric light installation, an excellent water supply, and an efficient Fire Brigade, all controlled by a Town Council to whom the control of the affairs of the town has been entrusted since I891. In its situation and sanitary conditions the town is very similar to Georgetown, and a special description is therefore not necessary, but it must be noted that its death-rate is lower.

The Villages. The Colony's rural population is resident in villages scattered along the coast-lands and for some distance up the principal rivers. Here the freed negro slaves settled after Emancipation. Forming themselves into companies, they bought with their savings, accumulated during slavery and the apprenticeship period, the estates of those of their former masters who were anxious to quit the Colony, or they purchased the front lands of plantations, the proprietors of which were eager to establish a resident population.

These rural communities range in importance from the hamlet with a population of 100 to the large village with 5,000 to 6,000 inhabitants. Several of these areas, it must be noted, while called villages are really potential towns from the point of view of both area and population.

FAUNA

THERE can be no doubt that British Guiana offers to the Zoologist, be he sportsman, amateur naturalist, or trained scientific man, a field of immense interest. The Colony is only a small part of the great continent of South America, yet its Fauna is typical of the geotropically region. Many of the animal forms characteristic of its present fascinating objects of study, while in birds and insects, its wealth is quite inexhaustible. It would be impossible within the limits of a short article to attempt to do full justice to so vast a subject; the plan here adopted will be to touch briefly on the commoner animals which the visitor is likely to encounter in the Colony, and merely to hint at those rarer or more curious forms which are deserving of a detailed study.

Fish.- Sharks are common at the mouth of the rivers, the Hammerhead *(Hygiene mallets)* and the Dusky Shark *(Carcharias obscurus)* being the two most frequently met with. The Sawfish, too, occurs, and a fine specimen of *Pristis Perotteti* may be seen in the Georgetown Museum together with a stuffed Devilfish *(Ceratopteravampyrlts)* which managed to entangle itself among the piles of the river front some years ago and was ignominiously shot for its stupidity. So ponderous was the fish that a crane had to be requisitioned to hoist it from the water. The Devilfish, by the bye, almost certainly owes its name to its appearance rather than to its disposition; its leaping antics are no myth, but the stories of its enveloping divers in its wings and attacking small boats are undoubtedly apocryphal.

Sport with the Rod.- Should the visitor be looking for sport with the rod, he need not be disappointed. The Tarpon or Cuffum *(Megalopsor Tarpon atlCmticus)*is widely distributed and can be taken either with the fly spinning, or live bait. The Mahaica and Boerasirie creeks are favourite haunts of this fish, and in them specimens of forty pounds' weight may reward the fortunate or skilful. The largest, however, occur above the lock at the Lama "Stop-off," which is a favourite resort for anglers. There Leukanani *(Cichla ocellaris)*-the best "fly fish" in the Colony and one of the tastiest, affords good sport, at it does on most of the lagoons and clear waters of the front lands. Snook *(Centropomus undecimalis),* may also be taken in such places with a fly, shrimp, or small fish, and near the falls on the big rivers the salmon-like Baiara *(Cyonodon scombroides),*runs to a weight of thirty pounds and affords capital sport as well as a welcome addition to the larder. Near Bartica, for instance, on the Essequibo

river, the Cartabac *(Tetragonopterus* sp.) which bears a strong resemblance to a sea-bream and averages a foot in length, may be angled for with a perch hook and a crust of bread, and Pacu *(Myletes setiger)* of ten pounds weight can be beguiled with the inner kernel of the I-Iatti fruit *(Hevea confusa).* Other fish which afford fair sport are the Haimara *(Macrodon traltira)* and the little Houri *(Macrodolt intermedius).*

Coming to fish of less direct interest to the sportsman, the small but vicious Perai *(Serrasalmo* spp.), is a source of considerable danger in certain parts of the rivers, for it has been well described as " the wickedest fish that swims." It will go for anything fish, flesh, or fowl that is bitable, and its sharp triangular teeth can shear through any tackle softer than steel wire. The electric eel *(Gymnotus)* and sting rays of more than one species occur in many of the shallow river waters and must be guarded against by bare-footed boathands. In the far interior, and especially in the Rupununi river, the gigantic Arapaima *(Arapaima gigas)*is still fairly abundant. Schomburgh heard of specimens from the Wo Negro which were fifteen feet long and over 400 pounds in weight, but it does not appear that these dimensions have ever been confirmed. In the trenches supplied by the sea and along the muddy foreshore the quaint Four-eyes *(Anableps tetroPhthalmus)* may be frequently encountered scuttling over the mud as actively as a lizard, swept backwards and forwards with' each recurring wave, or swimming lazily along with the upper half of each strangely modified eye in the air and the lower half in the water. Another fishy curiosity of the front lands is the little armoured Hassar *(HoPlosternum littorale, H. thoracatum)* which is common in the trenches and may occasionally be met with in droves on the inundated Savannah land seeking fresh fields and pastures new.

Fish as Food.- An important part of the food supply of Georgetown comes from the deep-sea fishing which is carried on by schooners in the blue water some distance from the coast, and from local line and seine-net fishing which is pursued in the muddy waters near the shore. The former produces Snapper *(Neomaenis aya)* and Grouper *(EPinePhelus itaiara, E. striatus),* the latter method mostly" skin fish" such as Gilbacker *(Sciadeichthys Parkeri),* Lau-Iau *(Piratinga retiettlata),* Cuirass *(Arius* spp.), and others of the cat-fish type. One of these, the Tampoco *(Sciadeichthys proops)* has a curious development at the base of the skull, and is sold in the shops as the" Crucifix fish". The deep sea fish are capital eating, and of the others the Queriman *(Mug£! brasiliensis),* Mullet *(lvlugil curema* and *M. incilis),* Butter fish and the Flounder *(Achims limatus)-all* " scale fishes "-are the most esteemed and the safest. The flat, sandy seashore and the brackish trenches abound in shrimps, which

are particularly good eating and are used to make a variety of dishes. A large Prawn *(XiPhopenaeus Kroyeri),* called" a Scotchman" from a certain redness which may be noticed in its legs and appendages, appears occasionally n the hawkers' trays, and ,. crab-backs "-similar to the" dressed crab" of English menus - are a staple delicacy of the colony and indispensable at all entertainments. The crustaceans requisitioned in such cases are the" Buck" or common crabs *(Ucacordata);*the" boxer," or " fiddler" crab *(Gelasimus* spp.), a nimble little fellow with one claw hugely developed, may be seen at any time scurrying over the mudflats and feeding busily unmolested by the epicure.

The only other denizen of the water which calls for notice is the Manatee *(Manatus australis)* which is frequently caught by the long-shore fishermen and occasionally offered for sale - some specimens are to be seen in the ponds of the Botanic Gardens, Georgetown - and certain porpoises which ascend the rivers and may be observed disporting themselves in the Essequibo River as far up as Bartica.

Birds.- The visitor will not have been half an hour in Georgetown without noticing the strident and insistent cry of the Kiskadee *(pitangus sulphuratus)* a typical example of the tyrant shrikes and one which lives up to its name in the most thorough-going manner. Its note is an almost perfect rendering of the French *Qu'est ce qu'il dit,* and for cheekiness, intelligence and love of bullying on a large scale, the bird can be compared only to the London sparrow. It is a yoracious feeder and its powerful pickaxe beak renders it an object of terror to smaller birds and a caution even to the hawks which abound on the coast-lands. Of these hawks, the commonest in Georgetown are the white breasted Chicken Hawk *(Herpetotheres cachinnans)* and a large brown species of buzzard. The curious cry of the former, resembling the screeching of a rusty gate, may frequently be heard and always with anxiety by the henwife. Another bird which the visitor is sure to make early acquaintance with is the Carrion Crow - a vulture in reality, of which two species *(Coragyps feetens and Cathartes ruficollis)* are common on the coastlands and are still to be found in Georgetown although discouraged as a nuisance by the sanitary authorities. The carrion crow is a foul bird in every sense of the term and appears to best advantage at a considerable distance - preferably high up in the air, where its graceful wheeling flight and marvellous *vols-Planses* are a delight to the eye and a lesson to everyone who aspires to become an aviator.

One of the most lovable birds of Georgetown is a tiny wren *(Troglodytes Clarus)-a* cousin of the English wren which is always a welcome visitor in the houses of the colonist, particularly of homesick Britishers; for not only is its appearance reminiscent of the Old Country but its note is a bright little warble which at once brings to mind the song of the English robin. Its friendliness, too, towards" humans" and their habitations is as homely and cheerful as that of the Christmas bird. There is a Red-breast in the colony-the American Robin *(Leistes militaris)* a large bird with a scarlet " shirt front " - only he is not a robin at all but a starling by family. There is also a real thrush *(Planesticus albiventer);* yet he is nothing of a songster compared to his European relatives.

The value of small birds in keeping down insect pests is fully recognised by the Government of British Guiana and a special licence from the Board of Agriculture is required before any bird may be killed. The visitor who wishes to study bird life in the colony cannot do better than begin at the Botanic Gardens where from years of efficient protection the birds are wonderfully tame and fearless of observation. There he will notice the beautiful Tanagers-the Cashew Sacki *(RhamPhocoelus carbo)* and the Blue Sacki *(Tanagra ePiscopus);* the pretty little ground doves of which three species are common - the savannah *(Columblna talPacoti),* the common *(C.grisea)* and the speckled ground dove *(C.passerlna)* ; the useful" Old Witch" or tick bird *(CrotoPhagaani)* with its curious amateur flight and liking for companionship of cattle; and the Icterides - the Yellow Plantain bird *(Icterus xanthornls),* the Guiana Blackbird *(Quiscalus lugubris)* and the large Black Rice bird *(Cassidyx oryzivora).* In all some 130 species of birds have been identified as frequenting the Botanic Gardens.

Along the east coast and up the numerous creeks, especially the Abary, many kinds of waterfowl may be met with, and during certain seasons good sport is to be had with duck and snipe. The Vicissi duck *(Dendrocygna discolor)* is often to be seen in flocks of thousands, and the wonderful white Cranes *(Ardea cocoi)* and the Egrets *(Ardea Egretta),* so valuable to the milliner for their plumes, are one of the sights of the coast-lands. Other birds which may be noted are the Negro-cop *(Mycterla americana),* the Heri *(Euxenura Maguari),* the Curlew *(Numenius Hudsonlcus),* the Pika *(Totanus melanoleucus),* the Flamingo *(Phaenicopterus ruber)* and the Longleg *(Totanus flaviPes).*The Golden plover *(Charadrius dominicus)* and the Muscovy Duck *(Cairina moschata),* the Powis *(Crax alector)* and the Marudi *(Penelope marail)* are common enough to afford excellent sport up the Abary River.

Of the" bush birds" the" maams " *(Tinamus* and *Crypturus* spp.) are plump-breasted and make capital eating.

Of the rarer birds mention must be made of the great Harpy Eagle or Bairidi *(Thrasaetus harPla)* specimens of which are very occasionally brought down from the interior, and the beautiful snow-white Bell-bird *(Chasmorynchus niveus)* whose musical note was at one time common enough in the forests, especially of the North West, though of late years it has shown a tendency to become rare. The jaunty little Cock of the Rock *(RuPicola ruPicola),* famous for his nuptial dances, may also be found if you know where to look for him, and the ungainly-looking but remarkably agile Toucans or Bill-birds *(Rhamphastidce)* are a feature of the forest.

One of the commonest and most startling experiences of bush life at night is the ghost-like "Who are you? " of the goat-suckers *(Nyctidromus albicollis, Caprim1tlgus. nigrescens Nyctibius grandis)* whose gaping bristly mouths find easy prey amongst the numerous night-flying insects. But the most curious form of bird life in British Guiana is the Hoatzin or Canje Pheasant *(OPisthocomus cristatus)* common along the Abary River and the Berbice River. The adult, which is about the size of a pheasant and boasts a crest rather like a poor imitation of the head ornament of the hoopoe *(Upupa epops)* has a curious habit of " squatting on its hunkers" like a frog; so much so that it wears its skin into a bald patch at those points. It has a slow and clumsy flight among the Mucca-mucca and low bushes which are its home and on the fruit of which it feeds. The young are remarkable among birds by the possession of claws on the first finger and thumb of the wing-hand. By means of these the chicks are able to climb and crawl with ease and rapidity. This feature (it may be mentioned), though primitive, does not make the Hoatzin " a link with reptiles" as is so often asserted; but the peculiarities of the bird - the unique character of its breast-bone and the possession of eye-lashes, amongst other points - entitle it to the distinction of a sub-order all to itself. The chicks are excellent swimmers and divers, and when they happen to fall from the overhanging bushes into the stream beneath, quickly scramble ashore none the worse for their wetting.

Special mention should also be made of the humming-birds, nearly thirty species of which are to be found in the colony. Several kinds are to be met with in Georgetown, flitting like flying gems before the flowers. Their charming little nests are sometimes found in gardens. The Emerald and the Grey-throated Emerald *(Agyrtria viridissima* and *Agyrtria lellcogaster)* and sometimes the Jacobin *(Florisuga mellivora)* are

frequently seen by the keen observer. Very like the humming-birds are the sugar-birds, several species of which inhabit the towns. One is a charming creature, variegated purplish-blue with bright scarlet legs *(Dacni cayana),* and another is similar with faded yellow legs *(Dacills angelica).*
Of the many parrots, the" Amazon" *(Amazona ochrocePhala),*the best talker, has a little yellow on the head and dashes of crimson on the" shoulders." The" screecher" *(A. alllaz01/ica)* has a yellow facc, a blue line over the eyes and green shoulders. The magnificent Macaws *(Ara macao-scarlet* and blue; *A. ararmmll*-Jnc and yellow; *A. cMoroptera-red* and blue) make handsome pets and can be taught to speak with expression. The Twa-twa *(Oryzoborus grassirostris),* a small black bird about 5 ins. long, with white feathers on the shoulders, is generally considered to be the best of the song birds. It is sometimes confused with the" Twa-twa slave *"((0. torrid1ls),* but as the abdomen of the latter is a dark chestnut there ought to be no difficulty in distinguishing between them. The Blue Sacki *(Tanagra ePiscopus)* is of a beautiful pale blue colour with darker primaries. It has no song. The two Icterids, the" yellow plantain bird" *(Icterus xanthornis)* and the " troopials" *(I. crocanatus* and *I. vulgaris)* are among the handsomest of the hawkers' specimens. They are somewhat alike, being a bright yellow with black throats and points. The troopials are, however, the larger, and have white bands across the wings. 1. *vulgaris* also has a black head and saddle. The" yellow plantain birds l' can often be seen wild in Georgetown, but troopials belong to the forest region.

A final word must be reserved for the beautiful Scarlet Ibis or Curri-curri *(Eudocimusruber)* which frequents the mangrove bush at the mouth of the rivers and creeks. At certain spots it occurs in such numbers as to give the trees the appearance of being clothed with red blossom.

Mammals.- Although British Guiana cannot boast the big game of the old World, fair sport can be had amongst the larger mammals. The Jaguar or " tiger" *(Pantheraonca)* is to be met with within quite a reasonable distance of the civilised centres. Occasionally the beast becomes a nuisance on the cattle farms and the back lands of the sugar estates; then a hunt will be organized and the raider shot. Of the other cats the Puma or American lion *(Felis concolor)*the Ocelot or Labba tiger *(Felis pardalis),* the Long-tailed Tiger-cat *(Felis macrura)* and the Hacka Tiger *(Herpailums jagitarondi)* occur, and their ferocity increases in inverse ratio to their size.

The Tapir or Maipuri *(TaPirus terristris),*a most ancient and interesting ungulate, is quite common along the banks of the quieter creeks such as the Abary, and the native

Red Deer *(iVlazama mfus)* and the Savannah Deer *(Mazama savannaruln)* may be hunted in the open country and the Wood Deer or WeIbisiri *(Mazamamemorivaga)*in the bush. Occasionally a herd of Peccary *(Dicotytes tajuca, D. peccari)* may be encountered, sometimes with embarrassing results. But it is to the scientist rather than to the sportsman that the mammalian fauna of British Guiana chiefly appeals. Such curious carnivores as the South American dFox *(Canis cancrivorus),* the Kinkajou *(Cercoleptes caudivolvulus),* the Coatimondis *(Nasua rufa, N. narica),* and the Crab Dog *(Procyon ., cancrivorus)*; the whole group of the Edentates-so well represented by the Three-toed and the Two-toed Sloths *(Bradypus citc1t!liger a~* nd *Choloepus didactylus),* the Armadillos and the Anteaters-and the Oppossums or Yawarris (the Yawarris are quite a nuisance in the towns) are all of great interest. The colony is the home of . the Guinea pigs, and these range in size from the ponderous Capybara or Water Hass *(Hydrochaerus Capybara),* the largest living rodent, to the slim agouti *(Dasyprocta aguti).* The puffy-cheeked Labba *(Agoutipaca)* affords one of the best kinds of the bush meat, and with that excellent game bird, the Maam, is always a welcome addition to the camp larder.

Monkeys.-The monkeys are well represented. The Howling Baboon *(Alouatta seniculus)* another misnomer, for it is no true Baboon - which makes more noise for its size than any animal in the world, may be heard near any bush camp, startling the dawn with sounds like those of fiends in torment. The Spider-monkeys can be seen along the forest paths swinging from tree to tree, and the pretty little sackiwinkis and Marmosets are commonly offered for sale as pets in the streets of Georgetown. A charming yellow pawed variety is a special favourite with ladies. The" organ grinder's monkey" *(Cebusapella)*of the London streets also hails from this part of the world.

Reptiles.- It was unfortunate that writers eager for graphic description and careless of unromantic accuracy should be so fond of picturing the' South American forests as swarming with reptiles. According to them the trees are festooned with anacondas, poisonous snakes litter every path, and the creeks and waterways are thick and slab with alligators. As a matter of sober fact, snakes of any description are very rarely encountered, and alligators, though common enough, are seldom seen and are never obtrusive. The " Camoodies," the constrictor snakes, though often of huge size, are harmless to man, if death to the smaller mammals. The "land camoodie" is *Boa constrictor* and the "water camoodie" or " American python" is *Eunectes murinus.* Deaths from snakebite are practically unknown, as are accidents from any other form

of reptile. The commonest poisonous snake is the Labarria *(Lachesis atrox);* then come the handsome Bushmaster *(Lachesis mutus)* and the repulsive Rattlesnake *(Crotalus terrificus).* The group of coral snakes is an interesting one, and is well represented in the colony.

The common alligator of the trenches is *Caiman sclerops,* but the " true" Caiman *(Caiman Niger)* occurs on the rivers, where it may reach a length of ten or twelve feet. The edible turtle *(Chelone mydas)* is occasionally caught off the coast and offered for sale in the markets, but its appearance is sufficiently rare to constitute something of an event.

Lizards, of course, are extremely common; the garden lizard *(Anolis* spp.) can be seen everywhere, scurrying over the leaves or jumping from branch to branch of the trees, sunning itself on the palings or racing along the paths, altering its colour the while through all shades of green and brown according to the character of the surface upon which it is resting for the moment. A larger species of a brown colour towards the head, changing rather abruptly to a rich green in the hinder half, occurs in many places round the town, and has been seen to prey on its smaller relative. The pretty little bronze Wood-slave frequently attracts the observant eye as its hunts among the dead leaves.

Iguanas are numerous and are esteemed a great delicacy by the natives. They attain a fair size-three feet, perhaps, in length-but in this respect are rivalled by the Salempenters *(TuPinambis negropunctatus),* ugly brutes with an unfortunate appetite for poultry.

Amphibia. - British Guiana is particularly rich in interesting amphibians. The great toad or Crapaud *(Bufo mqrinus),* exactly fitting Mark Tapley's description of him- " very spotted, very like a particular style of old gentleman about the throat; very bright-eyed, very cool and very slippy"- can be seen after nightfall in numbers on the grassy sides of the Georgetown streets making a hearty supper off the numerous insects to be found beneath the arc-lamps, while the tiny whistling frog (*leptodactylusocce Uatus),* a recent introduction from Barbados, supplies the music for the feast. Many forms of tree frogs occur, some charming in colour, others remarkable for their size, almost all possessing some interesting peculiarity in their development. Finally, mention must be made of those aberrant forms the Coecilians,

which are found in the colony - they are usually described as giant earthworms - and still await proper scientific investigation.

Insects .- Rich as British Guiana is in the forms of life already mentioned, its wealth in respect to insects is simply surpassing. For the purposes of this article the term "insects" may be taken in its popular sense and be made to include all forms of Arthropoda. Many of the spiders are wonderfully beautiful in pattern and colour, others are as repulsive as it is possible to imagine. Common in the houses is the loathsome" Nancy" spider *(Heteropodaienatorua)* often with a large, silken, disc-shaped bag of eggs beneath it. Many householders encourage it, alleging that it helps to keep down the cockroaches; some prefer the cockroaches - which after all are a nuisance only in old and badly-kept houses. The Tarantula, so-called, occurs in country districts, the. huge hairy Mygale, or bird-eating spider *(Avicularia avicularia)* in the bush, where undoubtedly it preys upon small feathered folk such as the humming birds - the loveliest living things in creation and the special glory of South America. Scorpions are seldom seen except in the remote interior, where some fairly large forms exist. A small sandy brown species (undetermined) occasionally crops up in town amongst old books or papers, but it is quite insignificant. Centipedes are not unknown and although alarming enough in appearance and reputation seem never to do any actual damage except to inexperienced chickens, which sometimes mistake them for a new and fascinating variety of worm and find out their mistake too late. Some very interesting types of Arachnids live in the bush and are brought down by collectors; but these are of scientific rather than of general interest. The tiny red" bete-rouge " - a larval *Trombidium-is,* however, sure to force itself on the visitors' attention. The irritation it sets up is intense, but this can be relieved by ammonia and prevented by the timely application of any form of unguent such as "boracic ointment".

Of insects, properly so-called, South America possesses an immense number of a bewildering variety of forms and a riotous exuberance of colour. A butterfly common in Georgetown, especially near passion-flower vines, is *MetamorPha dido.* Its colour scheme is simple - green and black - but the grace of its shape, the delightful lines of its markings and the elegance of its flight make it a real thing of beauty and one which always compels the admiration of visitors. Another lovely creature, reminding one of the European " swallow-tail," is the" Essequibo-moth " *(Cydimon leilus)* which in the autumn of 1912 occurred in swarms of thousands of individuals. Dozens of specimens - almost all damaged, however - could be captured any evening round the house-lights. When flying free, the full glory of its iridescent black-green wings and emerald

markings is displayed to wonderful advantage, and in the collector's cabinet it is scarcely less striking. In mere size the giant *Thysania agrippina* is pre-eminent; its wings have an expanse of more than twelve inches. But it would be hopeless to enumerate here the many insects the visitor may encounter. The best plan for those interested is to visit the Museum or the Biological Laboratory of the Department of Science and Agriculture and see the wonders for themselves. A final reference may perhaps be allowed to the remarkable migratory swarms of butterflies which are occasionally encountered. Millions of yellow butterflies *(CaUidryas eubule)* - all males and all flying in one direction - have often been recorded and the present writer once witnessed a flight of white butterflies *(Appias margarita)*on the lower left bank of the Berbice river which lasted for over three days and could only be compared, during the whole of that time, to a heavy snowstorm. And the extraordinary thing was that all the insects, were flying directly out to sea.

Ants.- It is impossible to enter into details regarding the ants of the colony. They are legion in number, highly complex in their social organisation and immensely interesting. The" coushie " or "umbrella" ant *(Atta cePhalotes)* is a nuisance especially on citrus plantations, but can be kept down by vigilance and carbon bisulphide or calomel. The huge fierce black Munuri *(Dinoponera grandis)* is met with in the bush and the Yackman or " Driver Ant" pays a visit now and then to the smaller settlements and effects a very thorough spring-cleaning. Termites (" White Ants ") are common, but not obtrusive. Their depredations consequently have to be carefully watched for and guarded against.

FLORA

BRITISH Guiana is a country full of interest to the botanist. The greater portion of the colony is still untouched by the hand of man and at every turn there is something to interest the systematist and ecologist. The object of this short account is to direct the attention of the reader generally to the vegetation as a whole and to mention some of the commoner plants to be found in the different localities.

It is possible to divide the colony, for the purpose of considering the flora, into regions according to the differences of soil and its formation, as each of these regions possesses distinct plant associations. The transition from one region to another is for the most part gradual and is never so abrupt that distinct zones of vegetation are defined.

The littoral portion of British Guiana is formed by a plain of marine alluvium that rises southwards from the sea with a gentle slope. These alluvial flats widen out in the eastern and western parts of the colony which are largely under cultivation with sugarcane, rice, and other products. This marine alluvium also extends for several miles up the shallow valleys of the larger rivers.

The Sea-Shore Fringe. The vegetation on the mud banks of the sea-shore is similar to that of all low shores of northern South America. The fringe of vegetation consists chiefly of courida *(Avicennia nitida)* which is largely confined to the coasts. The lateral roots of the courida grow upwards into the air out of the swampy soil and water in which the trees grow in order to provide the roots growing in the mud with the necessary air. At low tide these matted masses of roots in many places resemble vigorous dull-brown asparagus stalks. They form a natural breakwater, being well adapted to resist the force of the sea and to prevent the muddy shores from being washed away. Occasionally mangroves occur in this seashore fringe, but on the muddy swamps at the mouths of the rivers they become abundant. The black mangrove *(Rhizophora Mangle)*is particularly common, and the white mangrove *(Langunculariaracemosan)* occurs frequently. In the North Western District there are extensive forest areas of mangroves, arid they line the rivers for miles. As before mentioned, the mangrove sends out large numbers of aerial roots which extend outwards and downwards to form props or "stilts" so that the general appearance of

mangrove bush is a confused jungle of roots extending from the ranches to the swampy mud below. The fruit of the mangrove is worthy of investigation if that is possible, in order to see how the radices commence to grow while the seeds are still attached to the branches. These" young plants" swing' backwards and forwards with the breeze and when they fall stick so tightly in the mud that they are not washed away by the tides. The bark of the mangrove is used locally for tanning hides. In some places on the seashore and up the rivers, the dark green courida and mangrove bush is seen to be interrupted by a lower growing bush of a lighter hue. This is the impenetrable " bunduri " *(Drepanocarpus lunati-ts),* the prickly branches of which float with the rise and fall of the river. Good examples of this plant are to be found, amongst other places, at Enmore on the East Coast, Demerara, at the southern end of Wakenaam Island and along the eastern bank of the Essequibo opposite Fort Island. Small tracts of open swampy lands also occur at places along the coast and are usually covered with the giant swamp fern: *(Achrosticumaurem)-a* plant which is also to be seen in abundance in low-lying places on the front pasture lands of the sugar estates along the East Coast, together with the bullrush *(TYPhadomingensis)* and the bizzy-bizzy *(Cyperus articulatus).*

Along the Public Road. Of the drier portions of these pasture lands the" black-sage" *(Cordia Aubletii)* takes charge, while the "carrion-crow bush" (*ACassia alata)* with bright-green pinnate leaves and spikes of yellow flowers, is perhaps the most striking. The latter plant is common also on also along the sides of the roads in the alluvial section of the Colony and is often found in extensive clumps. In the trenches at the sides of the roads and on the sugar estates, are to be seen handsome white water-lilies *(NymPhcea ampla)* beautiful lavender water hyacinths *(Eichhornia caerulea* and *E. azurea)* the water lettuce *(Pistia stratiotes)* and the Sacred Lotus *(Nelumbium).*

Up the Rivers. As one proceeds up the rivers, the vegetation becomes very mixed and the number of species large. Amongst the most conspicuous plants are the giant aroids - the mukkamukka *(Montrichardia arborescens* and *M. aculeata).* These are common to all the rivers and are found in low, muddy and shallow places. They can be recognised by their shining, arrow-head shaped leaves and arum-like flowers and they often grow to 15 to 20 feet in height. The Konaheri or wild cacao *(Pachirti aquatica)* and the Konaheri-balli *(Pachira insignis)* also attract attention by reason of their large projecting tassel-like flowers, the former being of a yellowish hue and the latter a dark red. Their brown fruits which resemble cacao pods are also conspicuous. The long

sprays of red flowers of *Cacoucia coccinea* are common at certain seasons of the year, and other prevalent plants that are commonly noticed are the Trysil *(Pentaclethra filamentosa)*- a leguminous tree with striking yellowish white flowers - and, in swampy places, the Da1li or "wild nutmeg" *(Myristica surinamensis)* with its peculiar symmetrica11eaf arrangement and its nutmeg-like fruit.

The beautiful Wakenaam lilac *(jacaranda ovalifolia)* is oftenabundant and when in flower is very attractive. This tree sheds its leaves before flowering and the masses of pale lilac flowers borne from the bare whitish branches render it conspicuous. As the flowers fall the delicate young leaves, of a pale green hue, make their appearance. The Manni *(Moronobeacoccinea)*is common in certain parts 6f the most swampy areas, particularly in the North Western District and is readily recognised by the deep crimson colour of its flowers. The trees along the banks are covered with a thick drapery consisting of numerous Bignonias with their white and mauve flowers, and *Odontodeniaspeciosa* with its pretty apricot coloured blooms. Where the original forest has been cut down and secondary growth has made its appearance, the trumpet tree or pump-wood *(Cecropia peltata)* and the Long John *(Triplaris surinamensis)* are common. The former can be recognised by its straight clean stem surmounted by a crown of whitish-green peltate leaves. The latter is a large tree and at certain times of the year the females, covered with their creamy-white flowers, form prominent and conspicuous objects. In the North Western District and along certain parts of the lower Essequibo river, the rubber-producing species of Sapium also occur in abundance in places where the original forest has been cut down for agricultural purposes and abandoned to bush again, and when in fruit attract large flocks of parrots.

Silk Cotton and Mora.-At some distance from the river taller trees are noticed, which tower over the remainder of the vegetation. Of these larger trees, the silk cotton *(Bombax Ceiba)* is the most conspicuous and is very common on the Courantyne side of the colony. It is characterised by the huge spread of the whole of its almost horizontal branches, and by the pendant seed-pods which swing with the breeze from the several leafless branches and twigs. When the fruit bursts, the surrounding vegetation is covered with soft silk down similar to " kapok," by means of which the seeds of the trees are enabled, through the agency of the wind, to be scattered far and wide. From the branches of the silk cotton often hang great numbers of purse-like nets of the bunya or " mocking bird." Specimens of Mora *(DimorPhandra Mora),* numerous along the flat clay banks of most rivers, are to be seen. They are large trees possessing massive buttresses, and their foliage presents many beautiful tints in its different

stages of development. It is difficult to describe the beauty of the delicate pinkish-red foliage of the new leaves of the Mora. It must suffice to state that at first one is often deceived by mistaking a distant mora in fresh leaf for other beautiful trees in flower, and that the delicate shades of the mora foliage are one of the attractions of those rivers where these trees occur abundantly.

Palms. - Throughout the whole of the alluvial region palms are abundant, and attract attention on account of their great variety and beauty. Along the banks of the rivers and in the frequent swamps adjoining, clumps consisting of 6 to 12 stems of a very graceful, feathery palm with leaflets of a pale green colour are commonly seen. This is the beautiful Manicole *(Euterpe edulis)* which is widely distributed in the swamps throughout the colony and in places constitute almost a true forest. Scattered amongst these clumps of manicole are often seen slenderer-stemmed palms growing singly that resemble them very closely. These are the rehu *(Euterpe stenoPhylla)* which occur scattered among the manicole along the banks of the rivers, where the ground is comparatively dry. The Ite (Aeta) *(Mauritia flexuosa)* is one of the most abundant of the palms of Guiana, and is found growing in moist ground, chiefly in the" floating savannahs" and on low-lying land that is flooded in the wet season. It is occasionally seen in swampy places along the banks of the rivers, and can be recognised by its stout column or stem surmounted by a crown of large, dark green " split-fan" leaves. From the young unfolded leaves of this palm, the Indians make the tibisiri fibre for their hammocks. Other swampy-loving palms are the truli *(Manicaria saccifera)* - the leaves of which are largely used for thatching purposes very common in the Pomeroon and North Western Districts; Turu *(Aenocarpus baccaba)* the fruit of which makes a delightful drink. The dahlibanni *(Geonomabaculifera),* a small palm common in the eastern side of the colony and along the Essequibo river (also used for thatching); and the buba *(Iriartia exorhiza),* which grows singly and has curious stilt-like aerial roots. The kokerit *(Maxi-1illianaregia)* is probably the grandest of all the British Guiana palms. It occurs in most parts of the colony, except, perhaps, on the immediate coastland, and is a striking plant in all stages of its growth. When young, before the stem is developed, the large feathery leaves rise almost straight from the ground and later, when the stem has developed to a great height, the leaves resemble huge curled ostrich plumes as they sway gracefully to and fro in the wind. Other palms worthy of mention are the" pimplers " *(Bactris spp),* the Awarra *(Astrocaryum tucumoides),* the Akuyuro *(Astrocaryum tucuma),* the Paripi *(Guilielma speciosa);* cultivated by the natives and the Kamawarri, a trailing palm *(Desmoncus croacanthos)* .

Orchids. – On the lower beaches of the rivers, orchids are not so conspicuous as they are higher up. As a rule, the flowers are smaller. Several species of *Epidendrum, Gongora* and *Catasetum* are common, while the red flowered *Rodriguezia secunda* is to be found in the eastern portion of the colony, and the beautiful *Ionopsis puniculatus,* with its panicle of numerous white and mauve flowers; (these delicate flowers remain a long time without fading), and the pretty *Oncidium iridifolium* in the North Western District. Among the epiphytes, bromeliads are frequent, and in some places the wild pine *(Bromelia spicata)* and the" old man's beard" *(Tillandsia usneoides)* are commonly met with in large numbers.

Wallaba Forests .- The littoral alluvial plain is traversed by lines of sand-dunes about 30-40 feet in altitude. These sands consist of white quartz and the vegetation differs considerably from the general vegetation of the alluvial sections. In the central and eastern parts of the colony, these slightly elevated lands are covered with what is known as "wallaba forest." The "soft wallaba" *(Ep;"uafalcata)* and the "Huri wallaba" *(E. Jenmani)* constitute about 40 per cent. of the forest trees on these lands. The soft variety is easily recognised by its large falcate-shaped fruits, which hang pendant from twigs on long cordlike stems. Vanilla *(Vanilla Planifo,lia)*is also common in some parts, creeping up the trunks of trees; but very little fruit appears to be set by natural means. In the depressions between the sand-dunes occur the characteristic swamps. In the wet season these depressions are more or less deeply inundated and are practically impassable. The plants found here are chiefly the swamp-loving palms, but in the drier parts, ferns, marantas (the mukru used for making baskets in the colony is obtained from a Maranta *(Ischnosiphon obliquus),* and some trees occur as for instance Manni and Corkwood *(Pterocarpusdl'aco).* The crab-wood *(Carapa guiane1tsis)* is common, and is exploited for its timber and for the oil its seeds produce.
The Wet Savannahs.- The continuity of the forests of the littoral alluvium with the higher undulating forests is interrupted by the swamp-savannah region. These savannahs occupy slightly depressed parts of the flat alluvium and form natural reservoirs of fresh water, which are drained by the numerous creeks and tributaries of the main rivers. The forest vegetation bordering these creeks extends into the swampy grass-clad savannahs, and therefore the change of vegetation is gradual and not abrupt. Irregular stretches of land covered with forest vegetation are dotted about, as well as inland lakes of open water. Entering one of these savannahs by one of the numerous creeks that drain it, the fringe of forest along the stream shuts off from view the savannah proper, and the characteristic features of the region are not seen until the head of the stream is reached.

A Swamp scene. - The vegetation along the banks of the creek becomes thinner and lower as the swampy region is approached, and the monkey apple *(Anona palustris),* with its fruit resembling somewhat the sour-sop, and the white-cedar *(Tabebuia longiPes),* with its white flowers, are commonly noticed. Towards the head of the creek the forest is reduced to a single line of diminutive, slender-stemmed white-cedar trees, and the large terrestrials *(Crinum spp.)*are to be seen in bloom here and there, as also are the curious flowers of the sub-aquatic orchid *Habernarialbngicaltda)*and the blue and yellow bells of species of *Lisinathus:* As the head of the creek is reached an extensive level expanse opens out covered for the most part by sedges and strong-growing grasses with the arborescent mukka-mukka scattered throughout. Occasionally ite palms are seen near at hand, while on the horizon an apparently unbroken grove of these beautiful palms occurs. These savannahs present us with the ite in all its beauty, and on some of the forest-clad islands that are dotted about very fine examples may be noticed, often carrying in their crown numbers of the orchids *Catasetum longifolium* and *Vanilla palmarum,* which are to be met with nowhere else. As the boat proceeds, an inland lake opens out to view, or the creek widens and handsome waterlilies *(Nymphaea ampla, N. amazonica)* become numerous. In the daytime their flowers are closed, but at night or in the early morning these open stretches of water present a picture that is, to the lover of nature, most attractive. The numerous perfect snow-white flowers of the waterlilies are to be seen on the surface of the smooth, dark-coloured water and between their great flat floating leaves appear the pretty yellow and blue flowered *Utricularias* and the graceful floating shield of *Cabombaaquatica.*
Timber for Export. Succeeding the flat, coastal alluvium is a broad belt of slightly elevated, undulating and hilly country. In proceeding up the rivers as the land becomes higher the vegetation becomes taller. In this region are to be found most of the timbers that are regularly exported. Various kinds of kakeralli *(Lecythis* and *Eschweilera spp.)* are common, and are remarkable for their curious hard, fruit capsules. Mora is often plentiful and grows to a great size, whilst in the central part of the colony fairly extensive areas of greenheart *(Nectandra Rodiai)* occur. Along the banks of the smaller rivers and creeks, particularly in the eastern part of the colony, the balata *(Mimusops sp.)* is occasionally to be seen, with its high spreading crown of dark foliage.

The Intermediate Savannahs.-Between the rivers are often to be found slightly elevated sandy intermediate savannah lands covered with grasses and shrubs, forming

flattened watersheds: other scrub areas locally known as muri lands from the trailing "bush" called muri *(Humiria sp.)* that is prevalent on them, also occur.

Grasses and sedges are strongly developed and a large number of melastomaceous plants occur, while several Solanums are common. Small clumps of larger shrubs and trees are scattered throughout these savannahs but there are very few trees of large girth. *Clusia s*are very common, and *Curatella americana* is noticed everywhere.

Inland.- As one proceeds up the rivers to the higher lands, the forest presents varying features indifferent parts of the colony according to the nature of the soil. The most noticeable point is the general absence of palms. Species of *Bactris* and *Astrocaryum* do occur in places, and fine clumps of the last mentioned, the Sawarai *(A.jauari)* are to be seen in the Essequibo above Rockstone and up the Mazaruni. Kakerallis are common and many large moras can generally be seen. Along the Potaro numerous examples of wallabas 'with their pendant, flat fruits reaching almost to the water, form striking features, and on the banks of the Barima and its tributaries in the North Western District, the scarlet blooms of *Brownea latifolia* or rosa del monte, the "rose of the mountain," and the pale blue flowing spikes of *Petrea volubilis* attract attention.

The rivers are interrupted by falls and rapids, and representatives of the *Podostomacea* are to be found growing in the strong current on the rocks. The chief of these is *Mourorafluviatilis* which sticks on the bare rocks by its base without any apparent roots. At high water this plant is entirely submerged, but as the river falls after the heavy wet season its bunches of pink flowers appear above the level of the stream, while its fleshy leaves clothe the sunken rocks where they serve as an elastic but slippery buffer for boats. The water-guava shrub *(Psidiumfluviatile)* is also a feature of these rocky rapids.

The Island Flora. - Numerous islands occur in the rivers, and on the larger ones some fine trees are to be found. *Clusias* are frequent and owing to more light being available on these islands, *epiphytes,* especially orchids, are much more common than along the river banks. In the forest itself, it is often difficult to distinguish the various trees that occur. The attention is chiefly directed to the numerous species of *Selaginella* and of filmy *ferns-Hymenophyllum* that occur. The damp atmosphere also encourages the growth of epiphytal species of *Trichomanes* and *Polypodium.*

The savannah at the top of the Kaiteur Fall is exceedingly rich in the variety of its vegetation. Many of the Plants are very small and the little "sun-dew" *(Drosera*

communis) literally carpets the ground. The distinctive feature of the plateau is the giant bromelaid *(Brocchinia cordylinoides)* which covers the whole region, while another very striking plant, is the tiger-plant *(13illbergiaieb'rina).* The *Brocchinil* is so striking as to compel notice even from the most unobservant traveller and is to be found in enormous numbers. In the axils of its and only there, grows the beautiful *Ultricularia Humbotdtii.*

In the interior of the colony, large areas of sandstone occur, on which are many hills and mountains. The flora of these areas have many distinctive features though the flora of the true savannahs of the interior are not very well known. Grasses, dwarf shrubs and herb-like plants form the dominant vegetation but some parts are marked by the occurrence of certain localised species. Amongst these, the beautiful rosy-flowered *Bonnetia sessilis,* and the compact *Stifftia condensata* and *Comphia guianensis* are frequently to be noticed.
In the Rupununi district are to be found the tree Kartang (in Brazil *Pau Rainha* or Queen of woods), *Centrolobitt1nParaense,* valuable for its timber and the Brazil Nut *(Bertholetia excelsa),* the fruit of which is so well known.

In Georgetown. The visitor to the colony can see some of the more common of the indigenous plants in and around Georgetown. But few of these, however, will thrive so near the sea, and therefore the beautiful flora of the capital is composed mainly of introduced palms, trees and shrubs. The largest indigenous trees in Georgetown are the Silk Cotton, *(Bombax Ce£ba)*, the Sand-box *(Hura crepitans),* the Hog plum *(Spondias lutea),* the Long John *(Triplaris surinamensis),* the Cannon-ball tree *(CourouPita guianensis),* the Wakenaam lilac *(Jacaranda ovalifolia)* the wild cacao *(Pachira aquatica* and *P. insignis), Ficus leucosticta* and *Cedrela sp.* The indigenous palms to be found in Georgetown are the Akuyuro *(Astfocaryum tucuma)* the Awarra palm *(Astrocaryum tucumoides),* as well as the" pimpler " palms *(Bactris major* and *B. jlavispina).*
The Botanic and Promenade Gardens possess many beautiful examples of the native flora. Clumps of manicole palms are to be seen in both gardens, especially along the upper portion of the central avenue of the Botanic Gardens, as also are examples of the rehu. Growing in the Nursery houses at the Botanic Gardens are large specimens of the ite and of the truli. Fine examples of the kokerit palm are to be found in the Botanic Gardens.

Amongst the trees the most striking is the Cannon-ball tree *(CourouPita guianensis)* with its peculiar, sweet-scented flowers and its brown cannon-ball-like fruits hanging on naked branches up the stem. Fine examples of the crab-wood are to be seen in the upper portion of the Central Avenue of the Botanic Gardens, where also are to be found specimens of balata, konaheriballi, trysil, mora, locust *(Hymenaa courbaril),* silk cotton, and cedar *(Cedrelaodorata).* On each side of the main avenue drive are plants of the konaheri and konaheriballi *(the wild cacao)* while all around the first lake fine specimens of the mukka-mukka, the swamp fern and the black mangrove are growing. Numerous plants of the Wakenaam lilac adorn both the Botanic and Promenade Gardens, and the" rose of the mountains" can also be seen. Examples of wallaba are noticeable and some fine trees of the Long John are scattered in the park lands of the Botanic Gardens, while specimens Locust tree of the *Petrea volubilis* and *P. alba* are to be found in almost every garden in the city. In the lakes float numerous examples of waterlilies. *Utricularias* and water hyacinths, with the water lettuce *(Pistia), Salvinia auriculata* and *Azolla carolinensis.* The beautiful *Victoria regia* is to be seen in many situations and attracts immediate attention by reason of its large saucer-like leaves and its handsome white to pinkish-white flowers. In the Nursery houses and along the Calabash walk at the Botanic Gardens numerous fine examples of the indigenous orchids are kept, and there are also some fine examples of the local ferns. For the student the Jenman Herbarium in the Botanic Gardens is available. This contains a large number of dried specimens of the local flora, to which additions are constantly being made.

TIMBER AND FOREST INDUSTRIES

THE forests of British Guiana cover 78,180 square miles or about 87.4 per cent. of the total area. They extend from the Sea Coast to the frontiers, but are interrupted at intervals by *(a)* the coastal, or wet, savannas, of 1,200 square miles; *(b)* the intermediate, or slightly elevated savannas of Demerara and Berbice, 2,000 square miles; and *(c)* the interior savannas along the south-western frontier, of low elevation in the Rupununi District, and of greater elevation to the North along the Pakaraima Range, 6,200 square miles.

The forests presently worked for timber are in the easily accessible districts, which extend from the coast to the rapids and falls in the various rivers. This covers an area of 19,000 square miles. Above the falls transportation to the markets is difficult or impossible for timber, except the Essequibo River above Rockstone, which is served by a railway to Wismar, a navigable point on the Demerara River for ocean-going vessels. There are about 70,000 square miles of virgin forest. These tropical forests comprise a great variety of species, and the trees being rarely of social habit they are classed as " mixed forests.'' An area in which one species predominates is known by the name of the prevailing tree--such as, Crabwood, Mora, Greenheart, Wallaba or Dakama forest. Swamp areas are similarly known by the name of the prevailing species of palm. Muri, or scrub land, named from the Muri shrub *(Humiria sp.),* consists of open areas of white sand, with clumps of trees, low bushes, orchids and mosses. The total area is 1,000 square miles. Representatives of a particular kind of tree seen at anyone time in mixed forests are generally few in number, while certain kinds are so scattered that single specimens only are to be found at long intervals. This fact accounts for the difficulty experienced in getting together from any limited area a sufficient quantity of many valuable woods for export, or even for local use, although the aggregate numbers of such trees scattered over a wide area must be very large.

The forest generally reaches a height of 125 to 150 feet, and in rare instances up to nearly 200 feet. The boles of the trees are, as a rule, straight, gently tapering and clear

of branches for lengths of 60 to 70 feet, hence long and large logs can be had. The greater percentage, 40 and over, are trees of medium and small girth, producing timber which would square from 10 to 20 inches. Wallaba, comprising three varieties, is the most abundant timber. The Wallaba forests, on light coloured sand soil on the tops and slopes of hills, are composed of an average number of 169 trees of all kinds per acre, of which the two varieties, Soft and Ituri Wallaba, comprise 34.4 and 8.4 per cent. respectively, or a Total of 42.8 per cent. of all the trees in those forests. These trees are also found in greater or less numbers in other forest types on hill slopes extending down to the streams. Mora, the next most abundant, grows on clay flats bordering the rivers and larger streams. There are large areas and very fine stands of this tree in the North-Western District. Greenheart is found gregarious in patches, and also scattered in mixed forests.

The Crown owns 99 per cent. of the forest area, and wood cutting is permitted under *(a)* licence for a period of two years, which may be extended, for areas up to 5,000 acres, at an annual rental of 2 1/2 d. per acre up to 2,000, and ½ d. per acre above that, with a minimum charge of £1 0s. 10d.; or *(b)* lease for long period under special terms for areas above 5,000 acres. Security has to be given against injury to the forest and Royalty is payable on all timber cut.

The industry comprises woodcutting for Greenheart only, or for that and other woods for timber, lumber and railway sleepers, for wallaba shingles, vat and fence staves, posts and poles, charcoal and fuel. Logs of square-hewn timber are usually hauled to navigable water by manual labour or oxen; a few motor tractors have been used recently for this purpose, and on one grant winch and cable haul for about a mile, and rail to river 3 1/2 miles, has been adopted. The heavier woods are transported by means of punts alongside which the logs are slung, while the lighter woods are floated down the river in rafts. Charcoal, fuel-wood and other articles are conveyed by carts to a navigable stream and transported by punts to the markets.

Labourers for this industry are engaged under contract for periods up to three or four months; those for general work at a daily wage, and for felling and squaring at an agreed rate per cubic foot of the timber where felled. Charcoal is prepared on sandy areas, principally those bordering the Berbice and Demerara Rivers. The wood is converted by burning in covered pits, but brick ovens have also been used for this purpose.

There are 22 power-driven sawmills in the Colony and 5 woodworking factories, and a large number of sawpits worked by manual labour, which deal with the timber for local use and export.

Greenheart is exported generally in the form of hewn logs. For fuel wood, which is sold by the cord or by the ton, the principal varieties used are Wallaba and Manabadin; but Kurida *(Avicennia nitida)* and Mangrove *(Rhizophora mangle),* which fringe the coastlands and river estuaries, are also used.

Paper Pulp .- During 1923 the Imperial Institute, London, examined a number of British Guiana timbers to determine their value for the manufacture of paper. The results are encouraging and good yields of pulp have been obtained from the first ten, as will be seen in the list below :-

Vernacular and Botanical Names		Yield of dry pulp, expressed on material containing 12 % of moisture	
		Unbleached per cent	Bleached per cent
FOTUI	*Jacaranda copaia,* D.Don	53	45
KAAHORA	*Schefflera depressa,* Sprague, n.sp.	51	45
BARA-BARA	*Diospyros guianensis,* Giirke	48	40
WANOSORO	*CecroPiaJuranyiana,* A. Richter	47	39
HAIARIBALLI	LEGUMINOSAE,*Diplotropis sp.?*	45	40
KURUKORURU	*DiPlotroPsips.?*	43	38
HUROWASSA	*Pithecolibium trapezifolium,* Ben th	42	37
BARAMALLI	*Tabebuia sp.?*	42	35
HUBU	*Spondias lutea* L	41	36
LONG JOHN	*TriPlaris surinamensis,* Cham.	40	38
MANICOLE PALM	*Euterpeedulis,*Mart	40	34
ITE (Aeta) PALM	*Mauritia jlexuosa,* Linn.	28	20
MUKKA-MUKKA	*Montrichardia arborescens,*Schott	30	24

LIST OF VALUABLE AND COMMONER TIMBERS.

The following is a list of the more valuable and commoner timber trees and their uses, but over 200 different kinds of trees are already recorded chiefly from the accessible districts.

AWASAKULI*(Clusia sp.).-A* deep reddish-brown wood, fine grain and hard; sp. grav. 0.9 For house framing and furniture inlaying.

BALATA TREE *(Mimusops sp.).-A* deep red-brown wood, fine grain and very hard; sp. gr. 0.1 to 1.1; very durable. For constructional work, bridge piles in fresh water and many other purposes. Trees by law cannot be felled except under a written permit. Three varieties known.

BANIA OR EBONY*(Swartzia sp.).-Heartwood,* a purplish black, sapwood yellow; fine grain and extremely hard; sp. gr. 1'2 to 1'3. For inlaying, veneering, turnery, etc.

BARAMALLI*(Tabebuia sp.).-A* sapwood tree, oatmeal brown in colour, coarse grain, soft and light. Might be used for paper pulp.

B.G. MAHOGANY OR CRABWOOD*(Carapa sp.).-A* red-brown wood resembling mahogany, slightly open grain, firm to soft; sp. gr. 0.5 to 0.7. For house building, furniture, fencing, canoes, shipbuilding, masts and spars.

CEDAR, RED, OR KURANA*(Cedrela-":sp.).-A* light brown wood, coarse and open grain, soft and light ; ~sp. gr. 0.4 to 0.6. Used for house partitions, canoes, cigar boxes and furniture.

DAKAMA*(Dimorphandra sp.).-A* uniform reddish brown wood, coarse grain, hard; sp. gr. 1.1. A good building wood, might be used for furniture and railway sleepers.

FOTUI *(jacaranda sp.).-A* white wood, coarse grain and soft; sp. gr. 0.4. For making matches and boxes; suitable for paper pulp.
GREENHEART*(Nectandra sp.).-Three* varieties; Black, White and Brown. Old gold to greenish-brown wood with a larger or smaller heart, according to variety, of dark brown to black colour; extremely hard and durable; sp. gr. 0.9 to 1.2. For piles and dock gates in salt water, shipbuilding, wharf, bridge and house construction and fish rods. Greenheart is commercially the best known of the Colony's woods. It is partly gregarious in habit but is also found scattered in the mixed forests. It grows on hilly lands in sandy clay soils, chiefly on the hill slopes. This timber is almost entirely confined to the central portion of the Colony; it disappears towards the eastern boundary, and only a few small areas are known in the N.W. District. B. Guiana is the only country which exports Greenheart.

HUBUBALLI*(Loxopterygium sp.).-A* handsome wood of light brown colour with dark brown or blackish streaks, soft; sp. gr. 0.6 to 0.8. For furniture and boat-building.

KAKERALLI*(Lecythis* or *Eschwet'lera* spp.).-Several varieties. Black. A dark brown wood, excessively hard when seasoned; sp. gr. 1.0 upwards; durable, Brown, a red-brown wood; hard, durable and exceedingly strong. For wharf and house construction, bridge piles in fresh water, timbering and lagging in shafts and tunnels.

KABUKALLI*(GouPiasp.).-Two* varieties. Black. A red-brown wood, hard and durable; sp. gr. 0.8 to 1.0; has an offensive smell while being worked. For furniture, house and boat-building, railway sleepers and paving blocks.

KARTANG*(Centrolobium sp.)* (in Brazil, ‘ Pau Rainha ").- Wood an orange colour with vermilion grain and light and dark brown marking; durable. For shingles, fences, and house construction. Found in Rupununi District.

KAUTA*(Moquilea sp.).-A* brown, hard and heavy wood.

KAUTA-BALLI *(Licania sp.).-A* dark brown wood, close, straight grain, extremely hard; sp. gr. 1.2. Durable if not exposed to weather. For house-framing.

LOCUST OR SIMIRI*(Hymenoea* sp.).-Orange brown wood, close grain, very hard; sp. gr. 0.9. For furniture, mill-beds, trenails, boat-building, piano frames. Another variety with larger pods is “ Kawanari”.
MORA*(DimorPhandra sp.).-A* dark brown wood, coarse grain, extremely hard; sp. gr. 0.9 to 1.1; very durable and does not splinter. For ship-building, planking wharves and bridges, house building, railway sleepprs and wood paving. There are large areas of this timber bordering the rivers and main streams, especially in the N.W. District of the Colony. "

MORABUKEA.-Auniform reddish-brown wood, close grain and hard; sp. gr. 1.0 to 1.1. Not as durable as Mora; said to be used for same purposes.

PURPLEHEART*(Copa~fera* sp.).-Wood brown when freshly cut, rapidly turns a purple colour; close grain, extremely hard; sp. gr. 0.8 to 1'0. For furniture, veneering, house-framing.

TAURONIRO*(Humiria sp.)-A* dark reddish-brown wood, fine grain, extremely hard; sp. gr. 0,8 to 1.2; durable. For furniture, wheel-spokes, house construction.

WADADURI OR MONKEY POT *(Lecythis sp.).-A* uniform light reddish-brown wood, close grain, extremely hard; sp. gr. 0,8 to 1'2; durable, For furniture and house-building.

WAIKEY. Many varieties *(Inga* spp.).-Light and soft woods, generally, which might be used for paper pulp.

WALLABA.Several varieties *(EPerua spp.).-Soft* and Ituri varieties. Resinous brown woods, coarse grain; very hard; sp. gr. 0.1 to 1.1; splits very easily, straight and clean; very durable. For fuel, charcoal, shingles, fence, telephone and other posts, fence and vat staves, house frames, railway sleepers and paving blocks. This is the most abundant timber in the Colony.

WAMARA*(Swartzia sp.).-A* dark brown to black heart and yellow sap, fine grain, extremely hard; sp. gr. 1.0 to 1.1; durable. For inlaying, furniture and turnery.

YARURU OR PADDLEWOOD*(AsPidosperma sp.).-A* yellow-brown wood, open grain, hard; sp. gr. about 0.7 to 0.9. For paddles and tool handles; pliant and strong. Trees plentiful; the trunk is very deeply fluted as if a number of laths were joined edge to edge lengthwise, all radiating from a common centre.

Annual Utilisation.-Timber and other forest products declared during 1923 were as follows :- Greenheart 38I,311 cubic feet; Mora 26,936 cubic feet; other hardwoods, 6,034 cubic feet; B.G. Mahogany, 74,723 cubic feet; other soft woods, 12,466 cubic feet; boards and scantlings, 9,980 feet; Fuel wood, 61,292 tons; Charcoal, 4,799 tons; shingles, 3,533,600 in number; fence staves, 76,855 in number; vat staves, 16,968 feet; posts, beams and spars 34,569 feet; Greenheart and Mangrove bark, 528,251 lbs.; locust and chicle gums, 5,450 lbs. ; and balata, 1,136,162 lbs.

The average utilisation of timber during the five years 1915 to 1919 inclusive, was 726,220 cubic feet; this includes 122,677 cubic feet exported, of which Greenheart formed 81 per cent. The total home consumption of home grown and imported timber was 941,270 cubic feet, of which greenheart formed 49 per cent.; this includes

337,720 cubic feet of pine lumber imported from Canada and the United States of America. For the same period the average utilisation of the principal forest products was as follows :--

ARTICLE	UTILISATION	EXPORTS	HOME CONSUMPTION
Shingles, .. No.	5,686,145	2,920,862	2,765,283
Fuel Wood .. tons	78,560	7,945	70,615
Charcoal .. tons	4,556	2,530	2,026
Balata .. lbs.	1,407,272	1,407,272	Nil.

In addition, during the same period, there were imported from Britain, U.S.A. and Canada, an average number of 41,052 shooks and 130,593 staves and headings. "Shooks," in packs, include oak staves and headings of dismantled rum puncheons returned to the Colony and" staves and headings" are of oak newly imported for making rum puncheons. The above figures do not include timber and forest products from alienated lands.

The average value of the annual utilisation for the same period was:-

Timber of all kinds $313,065 (£65,222), and all other forest products, including Balata, $866,315 (£180,482), or a total value of $1,179,380 (£245,704).

The total sum represents a return of timber and all forest products from the total area of Crown forests of less than 2.5 cents per acre, while the value of the timber alone from the accessible Crown forests represent a return of only 4 cents per acre.,

BALATA.

" Balata" is the trade name of the coagulated latex of the balata tree; it is largely used in the manufacture of belting and boot soles. The industry, judged from the value of the exports, is a most important one. The gum is collected under licences extending over areas of from 50 up to 250 square miles, for periods of 5 to 15 years. The annual rental for a balata collecting licence, which confers the right only to tap balata trees, is $20 (£4. 3S.4d.) with a filing fee of $8(£1. 13s. 4d.). Security is demanded against destruction of the forests and royalty at the rate of 2c, (ld.) per lb, is payable on the dried gum produced. At the end of 1920 there were in existence, or awaiting issue, 749 licences.

The trees are generally gregarious in habit but they are also found scattered widely apart in the mixed forest areas; they are most abundant in the Berbice and Rupununi districts of the Colony. The trees cannot be felled except under a written permission and no tree may be tapped which has a girth of less than 36 inches at 4.25 feet from the ground. The tapping is done by means of a cutlass , the incisions in the bark being not more than 1.5 inches wide. The tapping grooves are made about 10 inches apart in a feather-stitch pattern up the clear bole of the tree and around only one-half of its girth. By means of leg-irons (" spurs ") tapping is now done from the base to the first forking of the trunk, a height of 50 to 70 feet above ground. Trees may not be re-bled until the previous cuts are entirely healed, which takes from 4 to 5 years,

The latex flowing down the cuts is caught in a calabash (or gourd) made from the fruit of the calabash tree *(Crescentiacujete)* and the result of the day's tapping is removed in tins to the camp where the latex is poured into shallow trays (" Dabrees ") which hold from 5 to 30 gallons or more. The latex dries on the surface into thin sheets which are successively removed until the trays are exhausted.
After being drained over the dabree the sheets are hung up in a roughly-constructed shed until dry. Labourers are paid by results according to the weight of dry balata collected. The yield of the trees varies considerably, the flow of latex being affected by changes in weather and other conditions, but on first tapping an average of from 4 to 6 lbs. per tree is obtained. On re-bleeding the same area of bark after a period of 5 years, by experiment, the yield is only about 1/3 that of the first tapping.

The collection of balata is done by black or coloured labourers under Government registration, or by Aboriginal Indians. Advances of money are usually given at the time of employment for the purchase of food, clothing and tools. In 1859 the first sample of balata was sent from this Colony to England and in 1865 the amount exported was 20,000 lbs. The demand for balata and its value has been steadily increasing in later years and the largest export in one year reached 1,595,888 lbs. in 1917.

OTHER FOREST PRODUCTS.

Other forest products comprise gums, oils and fruit as follows :-

Gums.- Gum animi, a hard, translucent, amber-coloured gum from the Locust tree *(Hymenoeacourbaril),* used in making varnishes, is collected under written permission and exported in small quantity.

Chicle gum used for making chewing gum has been recently collected and exported from a tree of the Sapotaceae order.

Balsam of copaiba used medicinally, from a tree *(Copaijera guyanensis)* found in the Upper Essequibo and Rupununi districts.

Haiawa gum, an aromatic, resinous, white gum obtained in fair quantity from the Haiawa tree *(Protium heptaPhyUum)* which is plentiful in some districts. It is used locally for incense and by the Indians for scenting their oil.

Fruit.-Tonkabeans are the dried seeds of the Kumara or Tonkabean tree *(DiPteryx odorata).* They contain cumarine and are used for perfumery.

Sawarri nuts one of the best edible nuts from the tree *Caryocar tomentosum;*

Brazil nuts, the well-known fruit of the tree *Bertholletia execlsa,* which is plentiful in the Upper Essequibo and Rupununi districts;

Monkey pot nuts, the fruit of the Wadaduri tree *(Leeythis sp.),* and Vanilla, the fruit of an Orchidaceous vine.

Oils.-Crab oil (" Andiroba" in Brazil) is obtained from the fruit of the B.G. Mahogany or Crabwood tree *(Carapa guianensis)* and is used medicinally and for illuminating purposes.

Kokerit oil is an edible oil obtained from either the pericarp or kernel of the fruit of the palm *(Maximiliana regia).*

Other edible oils are obtained from the fruit of the following palms, viz. :-Kuruwa *(Attalea spectabilis),* Akuyuro and Awarra *(Astrocaryum spp.).*

Medicinal substances are obtained from vines, shrubs, and the bark and fruit of trees, *e.g.,* Sarsaparilla, Quassia and Bibirine from greenheart, and tanning material can be obtained from the bark of many trees including the greenheart and mangrove *(Rhizophora mangle).*

Fibres.-The epidermis stripped from the unopened leaves of the palm *(Mauritia flexuosa)* is used for making cordage and hammocks by the Indians. Silk cotton, similar to " Kapok," is the light brown silky fibre surrounding the seeds of the Kumaka tree *(Bombax sp.).*

EXPORTS AND IMPORTS OF TIMBER, ETC.

During the five years 1915 to 1919, inclusive, the average exports of timber and forest products are shown in the following table :-

Timber.	Hewn logs cub. feet	Lumber & Scantling B.M. feet	Forest Products.	Quantity	Value Dollars
Greenheart ..	150,895	111,433	Shingles, No.	1,373,750	10,331
Value ..	$ 117,835	$ 12,320	Ch'coal, tons	2,631	46,613
Mora and hard woods ..	1,272	2,423	Fuelw'd, tons	7,674	24,779
Value ..	$ 637	165	Sleepers, No.	8,916	5,598
Soft woods, including B.G. Mahogany. ..	nil.	266	Tanning-bark lbs.	nil.	nil.
Value ..	nil.	$ 19	Balata lbs.	1,026,368	628,509
			Gums lbs.	2,588	195
Total value		$130,976 £27,287	Total value ..		$716,025 £148,339

The imports during the 1915-1919 period were dressed and undressed pine lumber, which averaged 337,721 cubic feet valued at $204,131 (£41,902), and shooks, staves and headings .valued at $197,625 (£41,172). In 1915 the imports of pine lumber amounted to 42 per cent. dressed and 23 per cent. undressed from U.S. America, and 58 and 74 per cent. respectively, from Canada; but in 1919 the figures were, respectively, 30 and 24 from the U.S.A. and 70 and 76 per cent. from Canada. The increase in imports from Canada is due to the mutual preferential tariff under the trade agreement between the Dominion and this Colony which was entered into in June, 1917.

The imports during 1922 included: undressed lumber: 128,590 cubic feet; staves ,and headings of white oak numbering 76,229 ; and no shooks.

Government inspection of Export Timber .- The inspection and branding of timber for export is at present under consideration.

In the meantime a large number of English timber merchants obtained the consent of the local Government for the inspection of Greenheart timber purchased by them, and to the end of 1923 over 100,000 cubic feet of this timber was branded and exported, the firm paying the cost of inspection.

Forest Reserve .- The Government have created a Forest Reserve on the Potaro River to include Kaieteur Gorge and extending from Arnik River down to a point on the Potaro about 5 miles below Amatuk Falls with a width of 5 miles on each bank of the river. The total area of 320 square miles is to be reserved as a National Park for the preservation of one of the most beautiful portions of tropical lands together with its flora and fauna. This reserve will not prevent the use of the Falls as a source of power.

RUBBER.

The cultivation of Para Rubber has been experimented with by many of the sugar estates in different parts of the Colony and a few small rubber estates established, and rubber grown in conjunction with cacao and coffee in several districts. Satisfactory progress was made by Para rubber on the Berbice, Demerara, Essequibo and Pomeroon rivers and in the North Western District. The Government, being convinced of the suitability of very large areas of the colony for rubber cultivation, established plantations of rubber-producing trees at experiment stations in different districts of the colony in order to ascertain the rate of growth, the best cultural methods and the yields of the different trees. The results obtained are of considerable value and should be carefully studied by all prospective growers. The experiments so far have demonstrated that the true Para Rubber *(Hevea brasiliensis)* grows vigorously almost in every situation in which they have been tried outside the flat coastal region.

Para Rubber grows the best on well-drained flat lands along the banks of the rivers and also upon the lower slopes of the hills. It is estimated that there are 10,880,000 acres of readily accessible lands, of which fully 9,000,000 acres are unalienated from the Crown. Of this vast area a very large proportion is eminently suitable for the cultivation of Para Rubber.

The forest region of British Guiana resembles closely those regions of Brazil where the *Hevea brasiliensis* grows indigenously. This forest region is a portion of the great tropical rain forest of the South American continent, where dampness prevails and vegetation is luxuriant. *Hevea brasiliensis* revels in a humid atmosphere, and the

progress that the young cultivations of Para Rubber made in the colony was only what was to be expected when it is recognized that the climatic and general conditions are so like those of the natural habitat of the tree in Brazil.

Through the enquiries of Mr. (now Sir) Everard im Thurn and the late Mr. G. S. Jenman, it was ascertained in the early eighties that the rubber used by the Guiana Indians was obtained from species of Sapium. It was not until 1905, however, that the cultivation of these rubber-producing Sapiums was undertaken, These plants grew vigorously and promised well. They grew very well in low-lying river lands, particularly in the North Western District. In all about 500 acres have been planted with these trees, but the tapping experiments that have been carried out are not encouraging, with the result that land put into rubber was planted exclusively with the Para Rubber *(Hevea brasiliensis).*

The area under rubber cultivation is decreasing owing to a serious outbreak of the South American leaf disease, which made its appearance in 1909; this, coupled with the low prices of recent years, has given the industry a serious setback.

Tapping of Para Rubber was commenced on two estates on the Demerara river, one on the Essequibo, one in Berbice and at the Experiment Stations at Onderneeming and Issororo. The yields were satisfactory and the product of good quality. Some British Guiana rubber was valued at the top price of the market in April, 1910, and at the International Rubber Exhibition held in London in 1911, a sample of rubber from an estate on the Demerara river was awarded the silver cup for the best sample of West Indian plantation rubber. At Issororo Experiment Station in the North Western District over one-fourth of the total number of Para Rubber trees at four years of age were of sufficient size to be tapped, and the yields were decidedly encouraging.

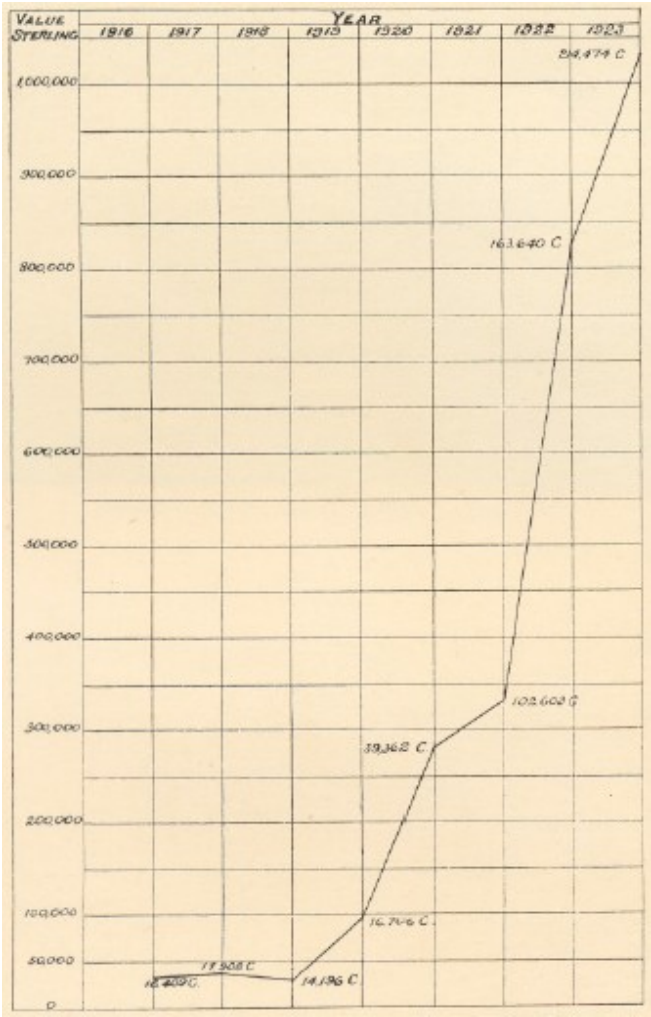


Diagram showing value of Annual output of Diamonds for the years 1916 to 1923 (inclusive)

SUGAR, RICE AND AGRICULTURAL INDUSTRIES

SUGAR

THE Sugar Industry is by far the most important in the Colony, and sugar with its by-products rum, molasses, and molascuit, contributes a large percentage of the total value of the exports. About 33 per cent. of the wage-earning portion of the population are directly connected with the sugar industry, while if those indirectly connected were under consideration the percentage would be in excess of 50 per cent. of the population.

The Estates.-The sugar estates are situated on the flat plain of marine alluvium along the coast, and for a short distance up the larger rivers. There is a sufficient area of suitable land in the colony to produce 2,000,000 tons of sugar annually. The largest area under sugar-cane cultivation on anyone estate is 7,209 acres at Plantation Diamond on the Demerara River. The majority of the estates, however, have only from 1,000 to 2,000 acres each under cultivation.

Thirty-nine estates were in active operation during 1922 which is only about one-half of the number that there was 20 years ago. The area under cultivation in 1922 was 60,761 acres. Keen competition, the necessity of reducing the cost of management, and the concentration of manufacturing operations, have accounted for the reduction in the number of estates, but have resulted in a great improvement in the processes of extraction and manufacture. A large area of the front lands of the estates has been abandoned from sugar cultivation, and extensions are yearly being made further from the coast line. A considerable area of the front lands abandoned from sugar is being utilised for the cultivation of rice and cocoanuts.
Cane-farming is carried on by small growers on the East Coast of Demerara, and it is estimated that about 2,000 acres are under sugar cane for small proprietors.

Methods of Cultivation.- A very large proportion of the sugar cane lands of British Guiana is below the level of high tide, and therefore extensive sea-dams have to be maintained. The estates are laid out in rectangles with numerous canals, drains and

cross drains for the purpose of drainage, transport and irrigation. All the transport of canes to the factory is carried out by water in large iron punts, and many estates also transport their produce by water. The drainage of the majority of the estates is maintained by pumping the water from the trenches into the large drainage trenches, which discharge into the sea or river at low tide through sluice gates. A considerable number of estates, however, obtain all the drainage required by natural outflow into the sea or rivers through sluice gates or kokers at periods of low tide. The sugar lands are mainly heavy clays, and therefore an elaborate system of surface drainage is an absolute necessity. The cross drains make it difficult under the climatic conditions prevailing to work the land with other than hand labour.
It has been found to be necessary, up to the present, for the rows of sugar cane to run along the beds instead of across them when mechanical or implemental tillage is practised. The result of this method on the heavier types of soil is that adequate drainage cannot be obtained. On the lighter soils of the back lands of some of the estates, implemental tillage is being carried out, while at Plantation Diamond-a river estate-both mechanical and implemental tillage is largely and successfully practised. Nevertheless, the greater portion of the field work of the sugar estates is done by manual labour-the canes are planted, weeded, trashed, cut and carried from the fields into the punts for transportation to the factory, all by hand.

Labour.-The demand for such a large supply of labour for continuous agricultural operations has made immigration from India an absolute necessity for the successful operation of sugar estates. The sugar industry is largely dependent upon an adequate and readily available labour supply, and further advance would have been made had a more abundant supply been available.

Three classes of sugar are manufactured. The greater bulk of the sugar produced is "grey," "dark," or vacuum pan crystals for the American and Canadian refiners, but some estates manufacture "yellow crystals" for the United Kingdom. This class of sugar constitutes the well-known "Demerara crystals," originally the product of the Bourbon variety of sugar cane. A little white sugar is also made. Rum is made on most estates; a certain quantity of second molasses is exported, and molascuit (a cattle food) is also manufactured.

Capital Invested and Cost of Production .- The capital invested in the Sugar Industry in British Guiana is roughly £4,000,000. The cost of production varies considerably, and at present averages between 3 and 3 1/2 cents per lb. for "dark crystals" polarising 96 degrees. The cost of making "yellow crystals" is somewhat higher. The cost of manufacture is roughly about 1 cent per lb. higher than it was a decade ago. This is

due to increases in labour, machinery and general supplies resulting from the war, which have not yet reverted to pre-war conditions.

Exports . The following tables show the average annual quantities and the values of sugar and sugar products exported from British Guiana during the quinquennial periods from 1892-3 to 1921 :-

Period	Sugar. Tons	Rum. Proof Gallons	Molasses. Gallons	Molascuit. Tons
1892-1896 ..	106,257	2,003,885	100,852	—
1897-1901 ..	96,542	4,062,034	357,201	—
1902-1906 ..	116,859	3,555,057	333,366	6,666*
1907-1911 ..	104,961	2,939,623	176,288	8,488
1912-1916 ..	92,096	3,643,992	125,979	3,527
1917-1921 ..	96,616	3,112,252	135,962	2,282
1922 ..	90,571	422,168	76,574	1,072
1923 ..	83,167	420,996	65,997	814

VALUES.

Period.	Sugar.	Rum.	Molasses.	Molascuit.	Total.
	£	£	£	£	£
1892-1896	1,305,989	135,946	24,965	—	1,466,900
1897-1901	1,066,376	189,186	11,731	—	1,267,293
1902-1906	1,142,284	107,099	11,070	23,679*	1,285,100
1907-1911	1,170,399	134,690	11,447	20,300	1,344,783
1912-1916	1,571,686	333,640	5,658	13,306	1,924,290
1917-1921	2,736,674	442,797	8,846	13,810	3,202,127
1922	1,494,827	33,410	4,302	3,752	1,506,291
1923	2,132,802	40,321	3,761	2,656	2,179,540

*Exports of Molascuit first commenced in 1904-5.

Direction of Trade .- A reciprocal trade agreement exists between Canada and British Guiana, whereby British Guiana Sugar exported to Canada receives a preference of 50 per cent., while Sugar exported to the United Kingdom receives at the moment from

the British Government a preference amounting to one-sixth of the duty on sugar, or roughly £3 15s. per ton.

This preference, while being insufficient to restore the entire confidence of British capitalists in the Industry, has done much to stabilise conditions, and has enabled the Industry to be carried on without too drastic a reduction of acreage and production. The following table shows the direction of exports of British Guiana during the past 20 years :-

Year	To Holland Tons	To France Tons	To United Kingdom Tons	To United States Tons	To Canada Tons	To elsewhere Tons
1912	—	—	12,607	9,354	55,694	166
1913	—	—	18,624	3,497	65,031	260
1914	—	—	52,161	2,734	52,191	50
1915	—	19,889	28,457	2,204	65,655	10
1916	—	14,347	9,825	9,357	68,104	16
1917	—	—	39,815	347	70,902	2,938
1918	—	—	42,510	—	50,871	513
1919	5,954	1,984	16,067	300	57,210	1,673
1920	2,977	3,275	27,773	11,403	36,377	2,154
1921	—	—	52,975	—	54,700	585
1922	—	—	27,439	20	62,938	174
1923	3	—.	33,956	1	48,034	373

DEMERARA RUM.

British Guiana, until the last two years, was the largest exporter of rum of all the British West Indian colonies, the bulk of this rum having been exported to the United Kingdom. However, owing to the huge increases in the spirit duties in the United

Kingdom, this popular drink has been practically placed beyond the reach of the working man - the habitual consumer - and this caused great stagnation in the rum market, which at present is very much overstocked.

In consequence, during the last two years a very small quantity of rum, indeed, has been exported. Unfortunately, there seems little immediate prospect of an increase in the demand for this by-product, and the sugar industry is therefore struggling on as best it can without the very considerable assistance which it obtained from rum.

In view of the decrease in the demand for rum, efforts have been directed towards converting molasses into industrial alcohol. Experiments have, so far, proved rather encouraging and while there is, as yet, no export of Industrial Alcohol, a considerable quantity is used by the estates for running lorries, estate cars and tractors for ploughing. The production of rum has been the subject of investigation in British Guiana on scientific lines for many years past, and as far as the production of alcohol from the sugars present in the wash (wort) it has, in many estate distilleries, been brought to a condition approaching perfection.

Demerara rum is the product of pure yeast fermentation, and has not a high flavour like other rums of slow fermentation where wild yeast and bacterial organisms are given opportunity to increase.

Experiments with Sugar Cane. - The Government's experiments with sugar cane were started in 1882, when a collection of the varieties then under cultivation in various parts of the sugar cane world was commenced, whilst in 1890 experiments were begun in raising canes from seed.

The standard cane, the Bourbon, suffered in the nineties from fungus diseases, and although the planters took every effort to prevent their spread, they had to resort to cultivating introduced varieties and new varieties raised from seed. The experiments with seedling varieties have had for their object the production of new varieties of canes from which, after rigorous selection and testing on experimental plots, the planters might select kinds to suit the special conditions of their plantations.

Areas Under Seedling, Canes. – In 1899 only about 550 acres were planted in the colony in new varieties, whereas the total area under varieties other than Bourbon for the year 1921 was 60,482 acres equal to 91.8 per cent. of the total 65,869 acres under

cultivation. Some of the seedlings now occupy large areas, the Demerara seedling D 625 being cultivated on 40,290 acres and the Barbados seedling B 208 on 2,254 acres.

Experiments with manures for sugar cane have been conducted at the Botanic Gardens and also on several estates. In some instances these experiments were carried out on a large scale, and the results received very careful consideration.

Many other investigations in regard to the sugar cane and its products have from time to time been carried out, and several are now in hand. During the year 1919, the British Guiana Sugar Planters' Association having sought legislation for the continuance and extension of the Sugar Cane experiments by the establishment of Experiment Stations, the Government introduced an Ordinance (No. 29 of 1919) which enabled the proprietors of all land under sugar cane to be taxed to an extent not exceeding one dollar per acre and thus provide funds for the working of these Stations.

The British Guiana Sugar Planters' Experiment Stations Committee leased for ten years a portion of Plantation Sophia comprising about 50 acres which they planted with new seedlings. This area was increased in 1921 to 110 acres.

RICE

The Rice Industry of British Guiana has made enormous strides and now the supplies not only meet the local demands but also a very considerable proportion of the wants of the West India Islands, and French and Dutch Guiana.

History .- Rice appears to have been first introduced from Carolina early in the eighteenth century during the occupation by the Dutch, although another importation is recorded about 1782, during the French occupation from the French colony of Louisiana. The possibilities of rice cultivation especially as food for the slaves was realised by Governor Gravesande, and by the end of the century were so well known that runaways or " bush negroes " commonly grew it in the neighbourhood of their hiding places. Bush expeditions always used to destroy these cultivations, and in 1810 it was reported that there was such a large quantity being cultivated at the back of Mahaicony that a special expedition to destroy it was recommended. In 1813 when supplies from the United States were stopped, it was suggested that British Guiana should grow larger quantities of rice but nothing seems to have been done.

The Hon. W. Russell records that in 1848, he came across rice being cultivated in Berbice by "Timini "Africans. In 1853 it appears that some paddy was introduced from Georgia and grew very satisfactorily. In the same year a company was formed in Georgetown for the cultivation of 150 acres of rice at Plantation Vive-la-Force on the Demerara River, but this venture did not prove successful. Several other attempts were made with cultivations of rice in different parts of the colony, but many failed from want of knowledge and also from lack of water. In 1865, encouragement was given to some coolies from the hill districts of India to cultivate rice on the West Coast, Demerara, and some 16 acres were grown with very satisfactory results. The industry expanded until about 1870, but subsequently the area under rice became reduced until in 1872 only a small amount of cultivation was carried on in the Abary district by East Indian proprietors. Later, however, encouragement was given to rice cultivation in Essequibo, and in 1886 over 200 acres were under this crop on the lower Essequibo coast. Small areas were also being cultivated in the Mahaicony, Abary, and Canje River districts.

From 1886, the industry gradually grew and in 1898 the area under rice was returned as 6,500 acres; but in 1901 a shortage of the Indian crop produced greatly enhanced local prices and the acreage increased to 19,000 acres, and in I922 the area under rice was 49,190 acres. The area under rice is cultivated chiefly by small farmers. Some of these rent their lands from the larger land-owners, while others cultivate lands owned by themselves.

Land and Labour .- There are large areas of land in the colony eminently suited to the cultivation of rice. The flat heavy coastal lands that have been abandoned from sugar cane form excellent rice lands. They are low-lying, and through constant cultivation to the same depth in sugar cane culture, have an almost impervious subsoil. In many districts irrigation could readily be carried out, and the Government some years ago passed a "Polders Bill," whereby it is made easy for groups of contiguous landowners to have schemes for irrigation devised and carried out on the co-operative system. The development of the rice industry has been due almost entirely to East Indian settlers. Of late years the authorities of sugar estates have given every encouragement to rice-growing, and large areas of abandoned sugar lands near the coast are rented to East Indians who decided to remain in the colony with their families after their term of indenture expired. These, during such times as they are not engaged with their rice crops, are employed upon the estates. .

The following table gives the acreage under cultivation from

1903 to 1922:-

Years.	Acres	Exports of rice-tons.
1902	16,670	-
1907	29,700	-
1912	41,900	-
1917	58,100	14,367
1922	49,190	8,800

During the Great War, the area devoted to the cultivation of rice increased to upwards of 60,000 acres. Rice was first exported from British Guiana in 1902-3, when about 5 tons, of a value of £60, left the colony. In 1908-9 the export was 3,120 tons, of a value of £59,000, while during 1922 the export was 8,800 tons. The greater part of this rice is being exported to the West India Islands and to French and Dutch Guiana, and the British Guiana "long-grain" rice is now preferred in these markets. The effect that the local production of rice has had on the quantities imported into the colony has been very marked. In 1899 the quantity of rice imported into British Guiana was 11,300 tons, while in 1911 the imports had fallen to 354 tons, and in 1922 no rice was imported. Rice, as a rule, is shipped in bags of 170 lbs. each.

Varieties Grown.- The " long-grained" varieties are those that meet with favour in British Guiana. The earlier introduced varieties naturalised under the names of " Creole" and " Berbice Creole" are the varieties most largely cultivated, but over 200 of the best varieties of rice cultivated in other rice-growing countries have been submitted to careful competitive trials as to their yielding powers under conditions similar to those existing on the coast lands of the colony by the Department of Science and Agriculture. From these varieties several have consistently given better returns than the Creole varieties, and large quantities of seed-paddy have been distributed free to numerous growers through the Department of Science and Agriculture. Further selections and crosses are being made year by year, and the selected varieties are tried in trial plots against the standard kinds. The results of these experiments are most encouraging.

Several large rice mills operate in different parts of the colony,

whilst there are a very large number of small ones scattered throughout the rice districts. From trials made it has been ascertained that paddy gives about 65-66 per cent. of its weight of clean rice. Two kinds of rice are made - a" brown" rice in which the paddy is steamed before it is passed through the mills, and a “white rice”.

Brown rice is more nutritious than the white rice. No polishing of rice is carried out. Rice-meal is also made. "Coleo," a cattle food made from rice husks and rice " ends" soaked in molasses, is also exported.

Improved Methods. - The methods of cultivation generally in vogue are the Eastern. Nearly the whole of the work is done by hand labour. Primitive ploughs and harrows are employed in many districts, and cattle are sometimes used for the trampling out of the grain, while winnowing is usually accomplished by hand.
Improvements in the methods of cultivation are being made, and increased returns have resulted. The cultivation of rice on a large scale by implements in the Abary district is full of interest, and is being watched very closely by commercial men, for if the venture is successful, there is every reason to believe that much larger areas of land will be brought under rice cultivation, and British Guiana, which is at present the greatest rice producing country in South America, would become an important factor among the rice producers of the world.

COCONUTS.

Coconuts thrive well on the coastal lands of the colony, especially where the land is more or less of a sandy nature, and cultivation is steadily taking place.

The coconut palms growing in the colony are scattered, being owned chiefly by small growers, but there are a few fair-sized coconut estates. Reefs of light sandy loams exist on the Corentyne Coast, along the East Coast of Demerara, and in Essequibo, where coconuts flourish, and even on the heavier coastal lands they grow satisfactorily and bear very heavily.

Areas. - The area planted with coconut palms has been steadily increasing, but during recent years there has been much greater activity in this direction, and the continued extension of the industry may be expected. The following acreage returns of the Board of Agriculture show the advance that is being made :-

Area

1902 3,770
1907 . . . . . …6,830
1912 13,700
1917. . . . . …23,900
1922 26,660

A large proportion of the 26,600 acres under coconuts in the colony is still young, and has not come into bearing. There are large areas of land in the colony suitable for coconut cultivation. The exports of coconuts are at present very small in relation to the number of acres planted, as the major portion of the nuts yielded by the areas which are in bearing, are utilised in the colony for the preparation of coconut oil and of cattle food. There is a very large consumption of coconut oil, especially among the East Indian section of the community, and the locally-prepared product has gradually displaced the imported coconut oil. During late years, however, the exports of coconuts have been increasing. This is due to the enhanced value of coconuts in the world's markets, which has rendered the exportation of nuts somewhat more profitable than the preparation of oil for local consumption. Coconuts are chiefly exported to the United States.

A small quantity of copra is made in the colony and exported. This copra is the ordinary grade used for the extraction of oil, and is mainly sun-dried, although attempts are being made at artificial drying.

As already stated, the majority of the coconuts produced are used for the manufacture of oil for local consumption. For obtaining the oil, open copras are generally used, and the returns are not as high as they should be. The oil is not refined, but is commonly settled or strained before sale. There are a few oil factories in the colony which are giving satisfactory returns, but with the introduction of modern machinery better returns will be obtained.

There is a factory for the well known cattle food Copraline, the principal ingredients of which are coconuts and sugar cane. Copraline is to be strongly recommended, not only in the case of cattle and sheep, but also for horses, as it is found to be very useful as flesh and energy producer. This food is also exported largely to England, where it is used with the very best results.

The exports of coconuts and by-products during 1923 were as follows:-

Coconuts	number	2,650,000
Copra	cwts.	8,400
Coconut oil	glns.	26,620

COFFEE.

In the early part of the nineteenth century British Guiana exported considerable quantities of coffee, but from 1846 no exports of any importance have been made. About the time of the abolition of slavery, the gradual abandonment of coffee cultivation took place, and at the present time the quantity grown barely meets the local demand. The coffee grown in the County of Berbice used to have a very high value, and even now there are times when small quantities of British Guiana coffee are exported to meet special markets.

There are large areas in the colony on which coffee grows splendidly. Many of the river lands yield good crops, and coffee often thrives on those river lands that are not well suited for the cultivation of cacao, and therefore cacao and coffee are often grown on the same property. In the Pomeroon district there are some excellent cultivations of coffee, and the returns are on the whole satisfactory, whilst other thriving coffee estates are to be found along the Berbice and the Demerara Rivers and the North Western District. The area under coffee increases but slowly, as there is frequently a limited supply of labour in the coffee districts and the prices for that bean have of late been frequently low.

The following are the acreage returns obtained by the Board of Agriculture :-

	Acres.
1902	900
1912	2,900
1922	4,240
1923	4,240

Recently the prices for coffee have improved and new areas are being planted up. The Liberian variety is now in favour for planting, and there are reasons for believing that the returns from coffee cultivation for the next five years are likely to be more profitable than during the past decade.

Experiments with coffee cultivation have been carried out at Onderneeming since 1904, when the old coffee fields were drastically pruned and intensive cultivation was commenced. The yields gradually increased, until they are nearly four times what they were when the experiments were commenced.

Experiments are also being carried on with recently-introduced varieties in order to ascertain their relative values when compared with the Arabian and Liberian kinds. Experiments have also been carried out with coffee at the Experimental Stations in the North Western and Pomeroon Districts.

Kola has been planted on the coffee and cacao estates, and flourishes on lands suitable for its cultivation.

CACAO.

The cultivation of cacao is carried out on some of the river lands of the colony. There are a few fairly large estates, but the majority of the cacao cultivations are small. The lands on which cacao flourishes best are the lighter lands on the lower reaches of the rivers, where good drainage to a depth of 3 to 5 feet can be obtained. Cacao is growing very well on the lands of the Berbice and Demerara Rivers, whilst its cultivation is also carried on along the banks of the Essequibo and the Pomeroon and in the North Western District.

There are large areas of land in the colony that are suitable for cacao growing, and a great increase in the cultivation of this product is possible.

Planting cacao requires, at the commencement, command of more capital than small farmers usually possess and therefore progress has been slow. With the establishment of an agricultural loan bank it is expected that larger areas will be planted up with this crop. Cacao may produce small crops in the fourth and fifth years, but it is not until the sixth year that any appreciable return can be expected. This wait requires that the grower shall have a certain amount of capital, as annual expenses in regard to drainage and cultivation have to be incurred. Provision crops can be satisfactorily grown during the first three years of the growth of the cacao, and sometimes may bring in returns large enough to cover a large amount of the cost of weeding and other cultural operations.

Practically the whole of the cacao of British Guiana is fermented for three or four days and is then sun-dried. One estate possesses an artificial dryer, and several proprietors are contemplating adding others. The fermenting boxes are generally well made, and great care is usually exercised in fermenting and curing the beans.

British Guiana cacao is of high quality. Practically only the Criollo and Forastero varieties are cultivated, and the beans are large. When exported the cacao usually fetches a good price, and this is mainly due to the care in fermenting and curing. British Guiana cacao contains slightly higher proportions of alkaloids than others, which may help to keep the prices relatively higher than some other West Indian cacaos.

The great bulk of the cacao produced is required for the local demands of the colony, and the exports are therefore small. The local demand for cacao is steady, and very fair prices are generally realised.

Practically the whole of the cacao is shipped to the United Kingdom, but in 1909-10 11,000 lbs. were sent to the United States.

FIBRES.

In the earlier parts of the last century cotton formed an important article of export. This cotton was obtained from the varieties of perennial tree-cottons which are able to withstand the detrimental effects of the meteorological conditions of the coast lands. Periods of excessive rainfall, frequently followed by more or less severe drought, seriously affect the yields of introduced cottons and the quality of the product. Trials have been made with Sea Island, Egyptian, Caravonica and other varieties, without success, while it has been demonstrated that the indigenous, hardy tree cottons give comparatively small yields. Experiments have been made with crossing the indigenous varieties with the more delicate, heavy-yielding imported kinds in the hope of developing a cotton that can be successfully grown on the coastal lands of the colony. Crowa fibre is prepared from a species of the wild Pine-apple, which is cultivated by the Aboriginal Indians for making cordage and hammock ropes. The fibre is a strong one of good bright appearance, but attempts at cultivation have not been successful owing to its cost and the difficulty of extracting the fibre from the leaves. Sisal hemp was cultivated on one estate situated on the Mazaruni River and over 200 acres planted and machinery installed for the extraction of the fibre, but unfortunately had to

be abandoned owing to a severe outbreak of *ColletotrichumAgaves,* Cav. This plant grows well on the coastal lands of the colony, and there are possibilities in. the development of its cultivation in many parts.

In the North West District an excellent fibre obtained from *Malachra CaPitata* (a native of Tropical America) has been very favourably reported on. It is hoped shortly to be grown on a commercial scale. It is 8 to 9 feet long, and experts have decided it is little inferior to jute.

LIMES.

The cultivation of limes in British Guiana is beyond the experimental stage. Limes grow remarkably well on the lighter soils of the colony if they are protected from the full force of the wind. On the light, almost sandy, soils of the Essequibo Coast they are growing excellently, as also on the lateritic soils of the Essequibo River, while cultivations are also established in the county of Berbice. In the interior of the colony lime trees are to be found flourishing around the various settlements, where they bear large crops of fruit of high quality.

There are large areas of loose, friable land that are admirably adapted to the cultivation of limes, and there is an enormous extent of ferruginous lateritic soils in many parts of the interior of the colony on which this crop can be successfully grown. Some years ago a company of some of the largest users of lime products acquired land in the colony for the cultivation of limes, and the progress made so far is distinctly encouraging. Other plantations of limes are being commenced. Efforts are also being made to induce the smaller landowners to take up the industry. There is a large area of land on which they grow satisfactorily still available. The lime trees are generally free from diseases and insect pests, and the cultivation that has already been commenced shows every sign of satisfactory progress.

The limes produced are large juicy fruit and their acid content is satisfactory. There is no difficulty in obtaining good fruit for seed purposes, as selection is now being paid attention to. Seedlings are readily raised, and after planting out need little attention if cultural drainage and weeding operations are carefully carried out.

Exports for 1921, 1922, 1923 are:-		1921	1922	1923
Citrate of Lime. . . .	cwts.	367	64	--

Lime Juice.	glns.	4,175	11,156	11,019
Essential Oil of Limes. .	glns.	544	634	218

FRUITS.

In those sections of the colony where cacao and coffee flourish, oranges, grapefruit and other citrus fruits grow well and yield well flavoured fruits in abundance, particularly in the North Western District of the colony. Scale insects and other pests are not very troublesome, and the fruit is generally of a clean, bright appearance. Some oranges are exported to the West India Islands, but the greater portion of citrus fruits goes into consumption locally.

Mangoes flourish and give very heavy yields on the better drained parts of the coastlands. There are two varieties commonly grown of which the" Buxton Spice" is by far the finer fruit, and considerable numbers are exported to the West Indian Islands.

A large number of fine flavoured grafted mangoes are growing at the Botanic Gardens, Georgetown, and a considerable number of these better varieties are becoming distributed throughout the colony.

Pineapples grow well on the lighter river lands. There are several varieties commonly grown, and some are of excellent flavour.

Bananas grow the best on the lighter river lands and on the back lands of the sugar estates and villages, but do not thrive well on the wind-swept heavier coastal lands. The possibilities of the colony for the cultivation of bananas have been under careful consideration from time to time, but it is now generally held that neither the labour conditions nor the soil of the coastal lands are favourable for the production of bananas on a sufficiently large commercial scale. If facilities were provided for the rapid transport of the fruit and for placing it upon the market, it is certain that suitable fruit for export could be grown on the lighter well sheltered lands which lie at distances from 10 to 20 miles from the coast line.

PROVISIONS.

Large areas of provision crops are under cultivation on small farms. Plantains, cassava, corn, yams, sweet potatoes, tannias and eddoes are principally grown. The greater portion of these crops is used locally, and very little export takes place.

Some of the low-lying lands are well suited to the production of plantains, and with good cultivation excellent crops are obtained. The plantains are generally large and of good flavour. They form one of the staple articles of diet of the labouring population. Cassava is grown throughout the colony, and is the staple article of diet of the Aboriginal Indians. Several varieties are grown, and in many localities yields of 6 to 8 tons of tubers per acre are obtainable in favourable years.

PASTORAL INDUSTRIES.

There are very large areas of coastal lands well adapted to pastoral pursuits. Cattle raising is carried out on pasture lands in front of the sugar estates and on the coastal swamp savannahs. The cattle are, on the whole, of a fair size and thrifty. Through lack of proper drainage much of the pasture land in the colony becomes swamped in the wet season, while not infrequently a drought occasions a lack of suitable water for drinking purposes. If proper drainage of the pasture lands was carried out and arrangements made for adequate fresh water supplies for drinking, considerable development might be made. Of late years cattle raising has been extensively taken up by large syndicates on the coastlands and the hinterland, "Rupununi," with, so far, satisfactory results.

Cattle are regularly exported to Dutch Guiana.

There are very extensive savannah tracts in the far interior on which at present cattle are being raised. With the provision of the Rupununi Cattle Trail in 1920, it is possible that this region will become the important cattle-raising section of the colony. Horses are raised in some numbers on the plantations and farms of the coastland. There is, however, the possibility of considerable development in this undertaking when suitable opportunities offer for ready sale.

The number of cattle in the country in 1921 was estimated to be 122,886, the number of horses 1,762, sheep 20,602, and pigs 12,312.

The Board of Agriculture have endeavoured to improve the quality of the stock in the colony by the importation of pedigree stallions, bulls, rams and boars for stud purposes. They also maintain a small stock farm at Onderneeming and H.M. Penal Settlement, Mazaruni, from which stock is sold periodically.

MINING INDUSTRIES

THE following ores and minerals of economic importance are known to occur in British Guiana, viz. :-

Gold	Kaolin
Platinum	Gibbsite (crystalline)
Silver	Bauxite
Copper	Cliachite (amorphous)
Gold telluride	Mica (muscovite and sericite)
Diamond	Auriferous quartz
Bort	Stybnite
Graphite	Galena
Micaceous iron ore	Pyrite and Marcasite
Hematite	Arsenical pryites
Magnetite	Chalcopyrite
Ilmenite	Garnet
Limonite	Monazite
Rutile	Pyrolusite
Zircon	Psilomelane and wad
Scheelite	Beryl
Tourmaline	Corundum
Sphene	Bitumen
Cobaltiferous wad	Lignite
Feldspars	

Of these, however, only gold, diamonds, bauxite and kaolin have so far been discovered in commercial quantities. The recent " discoveries" of platinum lack confirmation and it is the opinion that this metal does not exist in paying quantities.

GOLD.

Distribution.-The gold-bearing areas are very widely distributed throughout the Colony. Gold has been found in all the rivers with the exception of the Courantyne and the Berbice, where traces only have been reported.

The districts of the Colony where mining has been carried on are those adjoining the Essequibo River and its tributaries, the Potaro and the Konawaruk; the Mazaruni and its tributary the Puruni ; the Cuyuni; the Barima, Barama and Waini Rivers in the North West; and the Upper Demerara River. Gold has also been discovered on the Wenamu, a branch of the Cuyuni, forming part of the boundary line between the Colony and Venezuela.

Professor Sir J. B. Harrison, M.A., Kt., C.M.G., Government Geologist, who has made a geological reconnaissance of the gold bearing areas of the colony, states that "the Gold is found widely diffused in the districts occupied by the Archcean rocks, but usually only in payable quantities near intrusions of basic rocks." The basic rocks belong to at least two periods: (1) those "of the gneissose formation, probably originally gabbro, and " diabase, but now quartz-diorite, epidiorite, amphibolite, or horn-blende schist; and (2) the unaltered diabase, which is of later origin than the sandstone formation."

The major portion of the gold obtained has been from alluvial working. Auriferous quartz has been discovered and worked successfully in the Puruni, Cuyuni and Barima Rivers, but no quartz-milling operations have been carried out since 1916. Dredging is being successfully pursued by two English Companies in the Potaro district.

All the fields have proved of value, and rich finds have been made in each. Perhaps the most valuable field for its size was at Omai, on the left bank of the Essequibo River, from which place over 95,000 ozs. of the precious metal have been obtained from an area of about 60 acres.

The alluvial gold is usually coarse and nuggets varying in size from a few dwts. to a few ozs. are common; the largest nuggets found have been one of 333 ozs. from the Five Stars District, in the Upper Barima River, and one of 1111 ozs. from Tiger Creek, Potaro.

The industry has provided a steady means of livelihood for thousands who pursue fortune in the goldfields year in and year out.

The" Pork Knocker" and his Methods. The major portion of the gold obtained from the alluvial washing has been won by the " tributor" or, as he is locally called, the "pork-knocker." The origin of this name is unknown, but it was first given to a large

class of men who originally started work in the fields as labourers with a claim-holder, and who, after the companies and syndicates ceased working, remained in the districts and continued to " fossick " on their own account on the claims abandoned by their employers.
Sometimes small bodies of men, five or six, or even ten in number, combine together in their work, and, cleaning up at the end of each day, divide the results equally. With the tributor established, provision shops became necessary where he could take his gold at the end of each day to sell, purchasing his necessary food and stores in return. The shops sprang up on all sides in the various districts, and the necessaries of life can now be easily obtained at fair prices in all the principal fields. These shops have been an important factor in the pursuit of the gold industry in the colony. The shop owners locate claims in the vicinity of their shops on which tributors are permitted to work on the understanding that they obtain their supplies from and sell their finds to the shop owner.

The tributor, after prospecting, commences work by digging a pit from 14 to 20 feet square. All the over-burden, where such occurs, is dug out until the " pay-dirt" or gravel is reached. In this pit a " tom" or a " sluice" is then erected.

The" tom" is an open box about 8 feet long, 3 feet wide, and 15 inches deep, with an open screen inclined at an angle of 45° affixed at one end. This box is hung on pickets driven into the bottom of the pit. Into the "tom″ is thrown the gravel dug out of the pit, and this is puddled against the screen with a constant. stream of water brought in through the opposite end of the "torn.″ This liberates the gold, the fine particles of which pass through the screen and are caught in quicksilver in the" riffIles " placed in a small box just below the end of the " tom." Any large nuggets remain against the screen and can be picked out by hand, while the sand and dirt that is washed away runs into a tail ditch.

"Sluicing" is carried on in practically the same manner, but has the advantage of allowing a larger number of men to work at the pit, which is made about twice as large as that used for the "tom." The sluices are wooden boxes about 12 feet long and 1 foot wide and deep; They are placed end to end and sometimes as many as six are used at one time. A strong stream of water is passed through the" sluice" into which the pay-dirt is thrown. The rush of water carries the mass along the length of the" sluice" and so does the cleaning work, and saves puddling as in the " tom." The gold is caught in "riffles" placed all-along the whole length of the" sluice. The"sluice" is not suitable

for stiff ground, which is better worked with a " tom," but it has the advantage of enabling a larger area of ground to be worked with a comparatively smaller number of men.

Quartz Mining.- In 1890 numerous out-crops of gold-bearing quartz found in several districts attracted the attention of miners and capitalists. Quartz milling has not, however, on the whole given satisfactory results. The surface quartz is as a rule very highly enrichened, and consequently the tendency has been to launch out on a scale which the smaller values encountered on the lower levels have not been able to support. Auriferous quartz was for a time worked successfully at the" Peter's Mine" on the Puruni River, the " Barima Mine" near Arakaka in the North Western District, and the " Aremu Mine" on a tributary of the Cuyuni of that name. The most productive of these was the Peter's Mine, from which 39,017 ozs. were extracted in 4 years; but operations have been suspended on all of them. Many small quartz deposits which have been worked on a modest scale, often with very crude appliances, have yielded highly remunerative results however.

Hydraulicing. - Hydraulicing for gold was tried at the " Omai " and " Tassawini " Mines; but though the returns were remarkable for a while, the system proved too expensive where steam power is used. If cheap hydro-electric power becomes available in future this form of mining should prove successful.

Dredging. Gold dredging has been pursued since 1906 in the Potaro District with satisfactory results. Dredging is being carried on in the Konawaruk River by the Guiana Gold Company, Limited, operating with four dredges; and in the Mahdia Creek on the right bank of the Potaro River by the Minnehaha Development Company, Limited, with two dredges. The former Company has obtained a total of 88,343 ozs. from the commencement of operations in December, 1906, to 31st December, 1922, and the latter 22,012 ozs. during 1914-1922. The Minnehaha Development Company, Limited, also dredged a total of 16,303 ozs. of gold from the Minnehaha Creek, a tributary of the Konawaruk, during 1910 to 1922.

Royalty. - In order *to* encourage dredging, which appears to be a form of gold winning suited to the widely diffused alluvial values in this Colony, the royalty on gold won by dredging has been abolished and a 5 per cent tax on profits substituted.

A royalty charge at the rate of 2s. 1d. per oz. is payable on all gold won by alluvial washing or quartz milling with any equipment smaller than a ten-stamp mill.

Production of Gold .- The following is the amount of gold buIlion recorded at the Department *of* Lands and Mines since 1884 :-

From 1884-1905	1,756,630 ozs
1905-19 6	94,363
1906-1907	85,505
1907-1908	67,200
1908-1909	73,655
1909-1910	64,830
1910-1911	54,689
1911-1912	50,274
1912-1913	51,765
1913-1914	82,706
1914-1915	64,682
Apr.-Decr.-1915	39,794
1916	37,129
1917	29,539
1918	24,547
1919	16,217
1920	12,662
1921	12,826
1922	10,876
1923	7,262

	2,637,793 ozs.

The total value of the above amounts is £9,615,221.

DIAMONDS

During the early years of the gold industry, some diamonds were found when the day's" clean up" was taking place, and the stones naturally attracted attention. A gold

expedition to the Upper Mazaruni in 1860 discovered small diamonds in fair numbers, and in the following years several expeditions were dispatched to this district. Stones of very good" water" were found in considerable numbers, but they were small, and hence not of great value.

Diamond mining was first started in the Upper Mazaruni at Putareng Creek, and is still being carried on in the country around the Kuribrong and Cuyuni Rivers. The proved diamondiferous area of the British Guiana extends in a northerly and southerly direction from the Potaro River to the Cuyuni River, a distance of 150 miles. It extends eastwards for 40 miles from the foot of the Pakaraima Mountains.

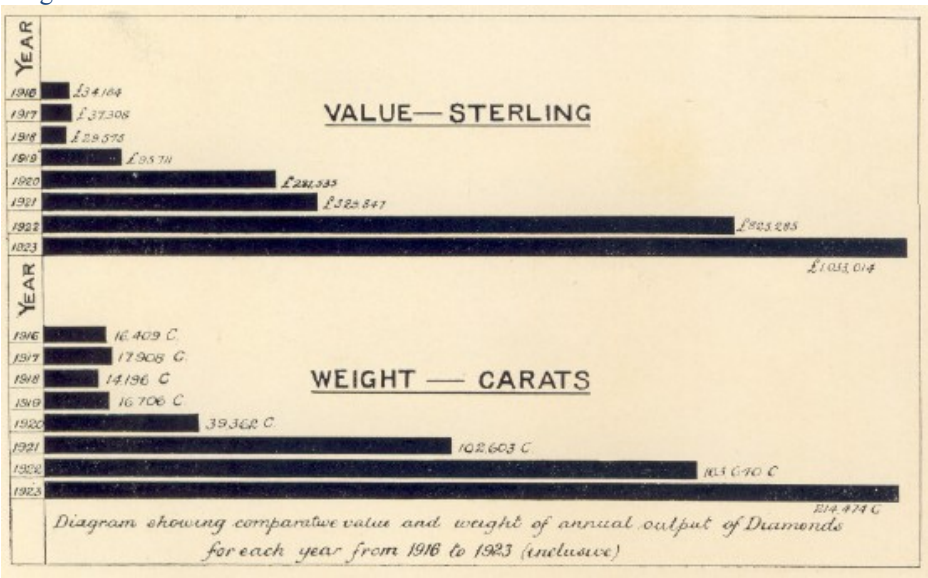
The country in which the diamond fields are situated is one of low relief, although to the South, West and North-West of the diamond area the conglomerate escarpment of the Pakaraima Mountains rises 3,000 to 5,000 feet above sea level. The Mazaruni fields, which are the most important at the present day, are situated in about the centre of this area. They extend from Tiboku Falls on the Mazaruni River upwards to Peaima Falls, a distance of no miles, and embrace all the tributaries of the Mazaruni between these points. They include also the upper part of the Puruni River and its tributaries. The scene of the present boom is Tacouba Creek, a tributary on the right bank of the Kurupung River, which joins the Marazuni on its right bank at a point about 175 miles from the junction of the Mazaruni and Essequibo Rivers at Bartica, a village situated 45 miles from the Atlantic Ocean and reached by river steamer from Georgetown. The geology of the Mazaruni River is described in the" Geology of the Goldfields of British Guiana," by Sir John B. Harrison, M.A., published by Dulau & Co., London. The rocks met with in the Tacouba Creek area are dolerite, conglomerate (including sandstone) and granitite, of which dolerite is the most recent and granitite the oldest.

The surface deposits in which the diamonds are found consist of the detrital products of these rocks. The gravel is derived almost entirely from the conglomerate and consists of quartz pebbles of all colours.

The diamonds are accompanied by certain heavy minerals, such as tourmaline in the amorphous as well as the crystalline form; black sands, which consist largely of illumenite with some ferromagnesian minerals, and gold in greater or less quantity.

The tourmalines are considered by the diggers to be diamond indications. They certainly indicate a concentration of heavy minerals, and the chances are that amongst

these there will be some diamonds. The source of much of the tourmaline is the granitite, and the black sands and gold can be referred to the dolerite, but all these minerals are also found in the conglomerate. The field relations also indicate that the diamonds have reached their present position as a result of the disintegration of the conglomerate.



Annual Output of Diamonds

The primary source of the diamonds is no doubt a series of volcanic pipes, or large areas of very basic rocks; but so far no trace of these has been found, if we except an exposure of micagabbro in the Issenero-Haimaraka District. The gravels derived, as described above, were deposited along the courses of the streams into which they had found their way. As the streams shifted and deepened their channels, much of the gravel was left raised above water level as terraces, forming what are termed the deep deposits. These terraces were dissected by the tributary streams as they developed and their contents of diamonds concentrated in the stream beds by the removal of the lighter and valueless material. In this way the shallow deposits were formed, and it is from this class of deposit that the great majority of diamonds are produced today. In this class the overburden varies from a few inches to 3 or 4 feet.

The pay gravel is 6 inches to a foot thick. An example of a rich creek is a claim on Puzzle Creek, right bank Tacouba, which averaged 80 to 100 carats of diamonds from 5 cubic yards of gravel. Some of the stones weighed up to 10 carats. The average local sale value is £4 3s.4d. per carat. In the deep deposits the gravel is 4° to 5° feet deep. Values, both in gold and diamonds, begin 10 feet from the bottom and improve in depth. Up to the present few of these deposits have been worked owing to lack of mining knowledge and the great difficulty and cost of conveying even the lightest machinery to the diamond fields by the existing means of transportation. It has not been found possible to work to a greater depth than 25 feet in an open cut with manual labour, but wherever bed-rock has been reached at this depth the returns have been high. In one case one cubic yard of gravel off the bed-rock produced 20 carats of diamonds and 10 dwts. of gold. These deep deposits can best be worked with light, cheap machinery. An essential part of such a plant is a machine in which the final separation of the diamonds is accomplished without the intervention of any of the labourers. Two machines of this type are now being used in the Mazaruni fields and doubtless many more will be erected before the end of this year. They are quite simple, and cost about £100 made locally. The shallow deposits are best worked as at present by the native diggers with the" sluice" and" tom."

The following is the production of diamonds for the last five years :-

Year.	No. of Stones.	Carats.	Value £.
1919	84,466	16,706	95,711
1920	234,456	39,363	281,536
1921	507,200	102,604	329,847
1922	816,857	163,640	825,285
1923	1,141,425	214,474	1,033,014

The stones are of good quality, the average being better than the Brazilian diamonds. The small size has been a deterrent to more systematic exploitation, but the average is now running under six to the carat and stones of 1 to 6 carats are plentiful, whilst others of 36, 38 and 49 carats have been found.

Diamonds are subject to a royalty of 2s. 1d. per carat. All gold, silver and diamonds must be reported in Georgetown at the Department of Lands and Mines.

Transportation to the diamond fields is by boat on the Mazaruni River, and owing to the numerous cataracts it is difficult and attended by a certain amount of risk. All the traders in the district run boats at regular intervals to keep their stores supplied, and they also carry passengers and freight for other parties. Native passengers are carried on the understanding that they will assist in “pulling paddles" in the boat, but this is of course open to negotiation with the owner of the boat. The time occupied on the journey by river varies from 20 to 26 working days according to the state of the river, but the journey has been done in small boats with an outboard motor in 5 days and by a 36" h.p. launch in 10 days when the river was in flood. Freight rates are from £29 2S. 6d. to £37 10s. per ton. Instead of travelling in a trader's boat, men, food and equipment can be conveyed in a boat purchased for that purpose. The maximum size of boat permitted by the River Navigation Laws is 40 feet x 71 feet x 2 feet 10 ins., having a capacity of about 4 tons, in addition to the crew of 20 men and their baggage.

For the navigation of this boat through the falls the law requires that the steersman and bowman shall have certificates of competency. These are issued by the Government after strict examination.

Labour in the diamond fields is provided by the negro race. Labourers drawn from the other races are rarely satisfactory The East Indians, especially, are not sufficiently robust to stand the rough life of the diamond fields. Wages vary from 3s. 4d. to 4s. 2d. per day, and the labourer has to be fed as well.

Food can always be purchased from the traders in the district. They will feed a labourer according to the diet scale fixed by law for £1 per week. The stores also keep a good selection of canned food. The greatest difficulty to be faced in this respect is the total lack of green vegetables and fresh fruit.

The whole country is covered by a dense tropical forest, and progress through it is necessarily slow and costly. Tents are made by spreading tarpaulins between trees, and under the shelter of these, hammocks are slung for sleeping in. Mosquito nets are necessary for protection against malaria infection. Permanent camps are built of round wood cut in the forest and thatched with palm leaves.

Extensive surveys are in progress with a view to determining if it is possible and economically practicable to construct a light railway or motor road from a suitable point below the first impediments to navigation in the Mazaruni river to a point above

the series of rapids and cataracts, whence large power launches could safely ply to the various parts of the diamond fields. The shortest route traced so far is about 90 miles and the longest about 145 miles.

BAUXITE.

Valuable and extensive deposits of bauxite in readily accessible situations have been discovered. The most extensive deposits at present known are situated in the Christianburg-Akyma District of the Demerara River. These deposits extend along the bank of the Demerara River from Plantation Christianburg on the north (situate 75 miles from the mouth of the river) upwards to Akyma and Rumaru in the south, a distance of 10 miles as the crow flies, and are in places of considerable thickness, but the deposits are variable in quality and all contain a high proportion of no commercial ore.

Actual mining operations for bauxite have so far only been prosecuted by the Demerara Bauxite Company (Northern Aluminum Company of Canada). This Company controls by far the major portion of the Christianburg-Akyma deposits above referred to. The Company hold some 3,000 acres of these deposits under leases obtained from the Government in 1914, the rest of the holdings being freehold acquired from private owners. No other leases have been issued by the Government.

By direction of the Imperial Government a survey was carried out by the Government Geological Surveyor under the direction of Sir John Harrison, M.A., Rt., C.M.G., Director of Science and Agriculture and Government Geologist, of the ore-bearing belt; with a view to ascertaining the value and probable extent of the deposits on the Demerara and Berbice Rivers - districts and samples were collected for expert technical and practical examination in England. By these investigations the very wide-spread occurrence of bauxite has been proved, but the determination of the commercial value of the greater number of the occurrences remains to be investigated.

The export of bauxite during 1923, the first year of steady operation, equalled 100,346 tons, making a total export of 150,326 tons since 1917, when the first shipment was made. No bauxite was exported in 1922 owing to the slump in the metal industries. Under the leases issued to the Demerara Bauxite Company, royalty at the rate of 5d. per ton is payable on the ore at time of export, with a minimum charge per annum at the rate of 5d. a ton for every 5 acres comprised in the lease.

Administration. - The Colony is divided into mining districts, each under the control of an Officer of the Department of Lands and Mines styled " Warden" or " Sub-Warden," who has powers to settle all disputes as to claims, who is continually traversing the district, and whose help and assistance in carrying out the Regulations is therefore easily obtained.

Labour, Equipment, etc . - Ordinary labourers are engaged at wages ranging from 2s. to 3s. per day upwards, with rations according to a scale fixed by the Government, which cost from 1s. 6d. to 1s. 8d. per day, and which can be obtained from the shops which exist in all districts. The labourers are generally bound by contract to serve three, four, or six months at a time, and there are usually black and coloured men, natives of the Colony and the West Indian Islands. A labourer who fails to complete his contract is liable to a fine of 10s or imprisonment.

Persons engaged in gold-digging buy or hire a boat - generally the former - for the purpose of reaching the diggings. The cost of a good craft capable of holding three tons of provisions, tools, implements, etc., is about £110. A boat of this size will require 14 to 20 men as a crew, including the captain, or steersman and the bowman. It is their duty to steer the boat clear of all rocks through the various rapids and cataracts met with on the journey. Their wages are normally-for captains, £10 8s. 4d. to £12 10s. a month with food, and for bowmen £8 6s. 8d. to £11 9s. 2d. a month with food. When a "boom" is on these prices increase 50 per cent.

The Prospector has first to obtain a Prospecting Licence (equivalent to a Miner's Right) at a cost of $5 (£1 0s. 10d.). This entitles him to prospect over the Crown lands for a period of twelve months from the date of issue thereof, and to locate claims in the usual manner by cutting lines to define the boundaries and erecting corner posts, boards or beacons. On filing notice of a location, a Claim Licence can be obtained at an annual charge of $5 (£1 0s. 10d. for gold and at the rate of 50c. (2s. 1d.) an acre for diamonds. If the Prospector wishes to protect himself against locations by others whilst he makes a more detailed examination of any particular tract of country, he can apply for an Exclusive Permission to occupy and explore it for a period not exceeding three years, the fees payable on such Permission being $10 (£2 1s. 8d.), being the fee for filing of application and a yearly rent of 7.5 cents (3.75d.) an acre payable half-yearly in advance from the date of the first advertisement of his application, from which date he is in legal occupation of the tract. Firm title such as, Mining

Concessions, dredging Concessions and Mining Leases carry a higher rent amounting to 20c. (10d.) an acre on Mining Concessions for gold, 50 cents (2s. 1d.) an acre on Mining Concessions for diamonds, and in the case of Dredging Concessions 10c. (5d.) for the right to dredge for gold and 20c. (10d.) per acre for the right to dredge for both gold and diamonds. Survey fees are payable at the rate of 10 cents (5d.) an acre.

Claims are limited to the size of 1,500 by 800 feet, and both quartz and alluvial mining rights are exercised under the single claim licence. The depth of the overburden or stripping varies in different districts, but may be averaged at 4 to 5 feet, the gravel or pay dirt beneath being usually 2 to 3 feet thick, and containing coarse gold and nuggets, though in many places only fine gold is met with. Water is plentiful, but has very little fall, and in a good many claims Californian pumps or spear pumps might be used advantageously, instead of baling with buckets as is at present done on many properties.

General .- Camp equipment and clothing are readily obtainable locally at reasonable prices, but surveying instruments, compasses, prospecting drills, air-tight uniform cases, blow-pipe or assay outfits should be purchased abroad. Persons travelling or staying in the bush should take at least 6 grains of quinine every day as a prophylactic. Quinine should not be regarded as a drug by those living in the bush, but as an essential part of their diet, which is necessary to keep the system toned up so as to ward off the possible attacks of fever.

Persons desirous of going to the Colony to prospect should either communicate in advance, or on arrival in the Colony, with the Department of Lands and Mines, where all information can be obtained and copies of the Mining Regulations, Maps, etc., be purchased. It is inadvisable to enter into negotiations with non-official concerns or individuals unless such are well known to the enquirer or satisfactory references have been given.

COMMERCE AND SHIPPING

THE chief port is Georgetown, situated at the mouth of the river Demerara on its east bank. The approach to the port is marked by an unattended lightship, anchored 11 statute miles North-East from the Light House, which is at the mouth of the river. Buoys mark the channel across the bar which is in reality a mud flat, the depth of water varying from 16 feet 6 ins. at high water to 8 feet at low water spring tide. Vessels go alongside the wooden wharves along the river frontage and use their own winches for loading and discharging. A ship alongside can do from one hundred to three hundred tons per day. There is a Graving Dock 212 feet long, where all ordinary repairs are undertaken by Messrs. Sprostons Ltd. The largest vessel docked was 195 feet long by 30 feet beam. Small quantities of bunker coal are usually kept for sale. The harbour is controlled by a Harbour Board with the Governor as Chairman.

During the year 1922 the number of vessels which entered and cleared for places outside the limits of the colony amounted to 3,060 with the aggregate total of 916,007 tons. Of these 883 were steam vessels and the remainder merely sailing craft, consisting both of coasters trading with Dutch Guiana, Venezuela, etc., and vessels running a more or less regular service to the Islands. Of the total tonnage of both steam and sailing vessels 41.67 per cent. was British and 18.86 per cent. Dutch.

IMPORTS.

The total value of the imports of the Colony for the year 1922 was returned at $11,938,448 (£2,487,177) or $29 (£6) per head of the population. 44.57 per cent. of the total imports were obtained from the United Kingdom, 20.19 per cent. from the United States of America and 21.60 per cent. from Canada.

The principal items from the United Kingdom were as follows :-

Imports.	Value.
Linen, Cotton and Woollen Goods	$943,766 = £196,618
Manures	438,821 = 91,421
Haberdashery and Millinery	64,825 = 13,505
Machinery,for Manufactureof	133,312 = 27,773

Sugar	
Malt Liquor	92,928 = 19,360
Coals	141,738 = 29,529
Hardware and Cutlery	84,166 = 17,535
Dried Fish And Boots and Shoes, Clothing, Miscellaneous Machinery, Soap, Manufactured Tobacco and Whisky.	60,022 = 12,505

The principal items from the United States of America were :-

Imports.	Value.
Flour	$ 38,123 = £ 7,942
Pickled Beef and Pork	243,715 = 50,774
Petroleum And Hams, Lard, Lumber, Linen, Cotton and Woollen Goods, Cotton Seed Oil and Leaf Tobacco	20,765 = 4,326

The principal items from Canada were:-

Imports.	Value.
Flour	$1,098,193 = £228,790
Fish, Dried or Pickled And Grains, Oats, Lumber and Potatoes.	268,199 = 55,875

The value of the import trade with the United Kingdom was slightly less than that of previous years. Import trade with the United States also declined.

The total value of the imports during the past five years has been as follows:-

Value.

1918	$18,41,962	= £3,835,825
1919	17,235,896	= 3,590,812
1920	24,861,533	= 5,179,486
1921	16,740,516	= 3,487,607
1922	11,938,448	= 2,487,177

Of the $11,938,448 (£2,487,177) worth of imports for 1922, 44 per cent. paid specific duties, 30 per cent. *ad valorem,* 18 per cent. were admitted free, and 8 per cent. were transhipped. The articles that paid specific duty were beef, butter, coffee, dried fish, flour, gange, grain, malt liquor, oils, opium, petroleum, pork, rice, salt, spirits, tea and tobacco; and the articles admitted free were agricultural implements, books, bullion, cattle for breeding purposes, fresh fruit, vegetables, ground provisions, machinery, manures, poultry, printing materials, quinine, sewing machines, tools, etc.

EXPORTS.

The total value of the exports of the Colony for the year 1922 amounted to $14,976,472 (£3,120,098), a decrease on the value of the export trade for the previous year of $2,491,350 (£519,031).

The Colony's produce and manufacture amounted to $13,123,535 (£2,734,070), which is a decrease of $2,327,790 (£484,956) on 1921 returns.

The quantity of sugar exported was low (owing to shortage in yield) and of the by-products of sugar, molasses alone exceeded the output for the year 1921. The increase in the amount of diamonds exported during 1922 amounted to 52,906 carats, valued at $2,215,659 (£461,596), the output being over double of the year preceding. The exports of coffee locally grown showed an increase of 403,356 lbs. in comparison with exports of the previous twelve months. The chief decreases of exports were Sugar, Rum, Balata, Coconuts and Gold.

The principal exports are sugar, and its by-products (rum, molasses and molascuit), gold, balata, rice, timber, diamonds, cattle, coconuts and coffee. The value of the export of sugar and its by-products has varied during the past ten years from 76 to 56 pef cent. of the value of the total exports, and the following table gives the value for the past five years :-

	Value of Sugar and by-products.	Per cent.
1918	$11,230,034 = £2,339,590	81
1919	14,378,114 = 2,995,440	82
1920	21,927,898 = 4,568,312	83
1921	11,874,821 = 2,473,921	77
1922	7,374,195 = 1,536,291	56
1923	10,461,794 = 2,179,540	-

The exports of sugar since 1918 have gone mainly to Canada, but considerable quantities are still shipped to Great Britain. The exports to the United States of America have considerably declined since 1920, only 20 tons having been exported in 1922. The exports of sugar during the past five years, and their destination, is shown in the following table :-

	To Great Britain.	To United States	To Canada.	To Elsewhere	Total Tons
1918	42,510	-	50,872	520	93,902
1919	16,017	300	57,211	9,612	83,140
1920	27,674	11,403	36,377	8,311	83,765
1921	52,975	-	54,700	595	108,270
1922	27,439	20	62,938	174	90,571
1923	-	-	-	-	83,167

The value of the gold exports is shown in the following table :-

	Quantities ozs.	Values.
1918	23,488	$391,467 = £81,556
1919	15,043	258,722 = 53,900
1920	10,063	200,938 = 41,862
1921	10,247	224,990 = 46,873
1922	9,522	179,070 = 37,306

1923	5,621	105,369 = 21,952

The exports of balata and their value have been as follows :

	Quantities lbs.	Values.
1918	1,140,788	$799,399 = £166,541
1919	1,405,215	984,397 = 205,083
1920	1,074,640	789,003 = 164,376
1921	1,390,402	977,395 = 203,624
1922	912,320	590,487 = 123,018
1923	1,026,368	628,509 = 130,939

The exports of rice and their value have been as follows :

	Quantities lbs.	Values.
1918	17,960,432	$ 854,695 = £178.061
1919	15,551,090	951,486 = 198,226
1920	18,110,596	1,130,734 = 235,570
1921	4,540,480	283,835 = 59,132
1922	19,694,080	601,855 =125,386
1923	8,895,040	273,687 = 57,018

The quantity of timber exported in 1923 was 152,167 cubic feet and 114,132 feet of sawn lumber, as well as 1,373,750 shingles, 2,631 tons of charcoal. 8,916 mora railway sleepers, together with wallaba posts and firewood. The export of coconuts reached 2,650,000. and the export of coffee 535,136 lbs.

Sugar is chiefly exported to Canada, gold to Great Britain, balata to Great Britain, rice to the West Indian Islands, diamonds to Great Britain, cattle to Dutch Guiana, coconuts to the West Indian Islands, and coffee to Holland. Canada took 36 per cent. of the exports, Great Britain 44 per cent and the United States over 4 per cent. The aggregate trade of the colony for the year 1922 totalled the sum of $26.914,920 (£5,607,275). Approximately 44 per cent. of such trade was done with Great Britain, 30 per cent. with Canada, and 11 per cent. with the United States of America.

OCEAN STEAMER SERVICES.

Canadian West Indian Service. - Under contract with the Government of the Dominion of Canada, the Royal Mail Steam Packet Company run a monthly cargo, mail and passenger service between British Guiana and Canada, calling at Trinidad, Grenada, St. Vincent, Barbados, St. Lucia, Dominica, Montserrat, Antigua, St. Kitts, Bermuda, St. John, N.B., and Halifax, N.S. .

Passages may also be booked by the Canadian Pacific Railway Service carrying on a three-weekly cargo mail and passenger service between Georgetown and London, Trinidad and Barbados, and Georgetown, *via* Trinidad and Barbados. Periodical cargo services are maintained by the Canadian Government Merchant Marine from Halifax and Montreal.

Great Britain.-The Harrison Line, with the steamers *Intaba* and *Ingoma,* maintains a six-weekly cargo, mail and passenger service between Georgetown and London, Trinidad and Barbados. The Harrison Line also has a regular cargo service to and from Glasgow and London *via* the West Indies which takes a limited number of passengers.

The Royal Netherlands West India Mail carry on a monthly cargo and passenger service from Amsterdam, calling at Dover to Curacao and other ports in Venezuela and the islands. These vessels do not call at Georgetown, but mails and passengers are transhipped at Trinidad with various lines on the great trade route between North and South America.

Other steamers running to Georgetown are :-The Liverpool Line (Booker Bros., McConnell & Co., Ltd.); The Compagnie Generale Transatlantique, from France ; The Clyde Steamship Co.; and The Trinidad Shipping and Trading Co., from New York. All of these carry mails, cargo and a limited number of passengers.

The Dutch Government maintain an inter-Colonial service between Surinam and Demerara, and carry passengers and cargo.

INTERIOR COMMUNICATIONS.

Public transportation facilities to different parts of the Colony are handled by the Government through the Colonial Transport Department and by Messrs. Sprostons, Ltd., as contractors to the Government.

The operations of the Colonial Transport Department extend at present along the coastal area from New Amsterdam on the Berbice River, to Suddie and Pomeroon on the Essequibo coast and Bartica on the Essequibo River, and also to Morawhanna in the North West District, 160 miles from the city. Messrs. Sprostons services are carried on from Georgetown and New Amsterdam up the Demerara, Essequibo and Berbice Rivers.

The Government services come under three heads, Rail, Ferry and Steamship, all working into one another.

The most recent acquisition by the Government is the railways operating from Georgetown to Rosignol 60 miles eastward along the coast, and from Vreed-en-Hoop on the West bank of the Demerara River to Parika, a distance of 18 miles. Since the passing of control of these Railways from the Demerara Railway Company to the Colonial Transport Department a great deal has been done to improve the service and greatly increased facilities are given to the the public as regards both freight and passenger traffic. The Demerara Railway is reputed to be the oldest in South America.
The most important of the Ferry services connects up the two banks of the Demerara River from Georgetown on the East Bank to Vreed-en-Hoop on the West Bank. An hourly service is maintained by the S.s. " Queriman," a steamer recently built in Scotland, splendidly equipped, and with ample accommodation for all classes of traffic. New Amsterdam on the Berbice River is connected with the rail-head at Rosignol by ferry. A ferry service three times daily is also maintained on the Essequibo River between Parika and the island of Leguan.

The Government steamers give excellent service on the Essequibo River to Leguan, Wakenaam, Supenaam, Aurora, Adventure and Bartica, the latter being the important station which forms the present gateway to the diamond fields on the Mazaruni. A steamer leaves Georgetown every Monday for Charity Pomeroon, and this service is extended by launch service to Kabakaburi.

The transportation services of a public nature provided by Messrs. Sprostons, Ltd., are as follows:-

The Berbice River is served by a steamer operating twice a week between New Amsterdam and Wikki River (100 miles), and some 17 intermediate stops are made on the run.

Between Wismar and Mallali on the upper Demerara River for a distance of 45 miles a bi-weekly service is given. The most interesting and most difficult transportation service and the one that reaches the farthest point is operated by this Company between Georgetown and Potaro landing. Four distinct stages are necessary to complete the journey. The first stage is a comfortable trip by a large and well found steamer for 65 miles up the Demerara River to Wismar. This steamer makes 18 stops, and also serves McKenzie, the works of the Demerara Bauxite Company, Ltd., on the opposite bank of the river to Wismar. From Wismar the watershed between the Demerara and Essequibo Rivers is crossed by a metre gauge railway, 18.5 miles in length, to Rockstone terminus, where a night is spent at the Company's hotel. The following morning the journey is resumed by launch up the Essequibo River and into the Potaro River to Tumatumari, 65 miles from Rockstone. Another night is spent here within sound and sight of the magnificent Tumatumari Falls, around which a portage of one mile is made, the journey being completed by a 12-mile launch service to Potaro Landing in the heart of the gold-bearing district. It is by this route that the famous Kaieteur Falls is reached, an additional two days' journey by boat. Arrangements for this trip must be made with Messrs. Sprostons in advance.

Postal and Telegraphic Service.-The postal service extends along the whole front of the colony and up the chief rivers. There is no subsidised mail service to the United Kingdom, but mails are transhipped by the steamers of the" Harrison" and" Bookers Lines, and also *via* Trinidad and Barbados by the Royal Mail, Packet Co., and by French and Dutch mail steamers. For Canada and the United States, there is a regular subsidised fortnightly service by the Royal Mail Steam Packet Co.

The rates for inland postage are 2 cents for 1 oz., and 4 cents for 1 oz. to the rest of the Empire and the United States of America, and 6 cents abroad. Inland telegraph charges are 18 cents for the first 12 words, and 6 cents for each additional 6 words of part thereof. A parcels C.O.D. system is also in force in the colony.

Cable and wireless communications to the outside world are maintained through the wireless station controlled and operated by the Government. There is also the cable of the West India and Panama Telegraph Co., but communication has been interrupted since May, 1919, and messages are transhipped by wireless to Trinidad, Barbados, Venezuela or St. Lucia, where they are handed over to the cable office. The telegraph system has been in existence since 1884, and is under the control of the Postmaster-General. There are exchanges at Georgetown, New Amsterdam and Vreed-en-Hoop.

OPPORTUNITIES FOR CAPITAL

DEVELOPING BRITISH GUIANA.

Opportunities for Capital.- It is probably true to say that of all the British tropical possessions there is not one richer in possibilities of so varied a character as British Guiana, and it is somewhat difficult to provide an explanation why the Colony has remained undeveloped during the 120 years that it has been under the British Crown. The lack of population is one of the chief factors in the failure to secure development, for the aboriginal population has always been scanty and the agricultural industries have always largely depended upon imported labour. Elsewhere in this pamphlet the question of immigration has been dealt with at considerable length, and it is not necessary to dilate upon the point. Other reasons for the backward state of the Colony are the undeserved reputation which at one time British Guiana possessed as being unhealthy; the fact that the Colony does not lie on any of the main ocean routes, and, chief of all, the ignorance as to its possibilities and even of its geographical situation. Probably large numbers of the people in the British Empire to-day still believe that British Guiana is a small island in the Caribbean Sea. Be that as it may, the fact remains that at the present day only a mere strip of territory along the alluvial coastlands is developed. The interior is practically unpopulated and probably its riches will never be ascertained, nor its development become possible, until it has been opened up by the railway.

Schemes are under consideration by the Government as to the best route which will serve the diamond and gold diggings, and also permit of the timber wealth of the Colony being realised. For nearly 100 years the Colony has been celebrated for its sugar and rum, but for various reasons stated elsewhere the sugar industry has declined, until today there are only about 65,000 acres under cultivation, although something like 2,000,000 acres of the coastlands are eminently suited to cultivation. The growing of rice is another industry which has rapidly expanded in recent years, and has large possibilities of future development. Demerara sugar and rum are highly celebrated for their excellence, and the quality of rice also compares favourably with that from any other part of the world. Coffee is another product which in recent years has been neglected. Indeed, there are considerable areas of coffee running wild, the present production being little more than enough for local consumption, yet in 1897 the Imperial Commissioner of Agriculture, after visiting the coffee estates of British

Guiana, expressed the opinion that" in no other part of the world which he had visited did Arabian coffee grow as he saw it doing in British Guiana, nor was it so free from disease." With sufficient capital and labour there is no doubt that the Colony should produce enough coffee of the finest quality to supply the whole Empire. With the increasing use of vegetable oils for margarine and other purposes it is somewhat surprising that those interested in soap and allied industries have not turned their attention to British Guiana-which according to a former Governor in an annual report "possessed vast areas of land suitable for the planting of coconuts."

There are other nuts and seeds suitable for the production of oils which are to be found in abundance or could readily be cultivated. Another tropical product which has great possibilities is cocoa. The locally grown cocoa is equal to that grown in Trinidad and Caracas, and there are large areas of land on the lower reaches of the river upon which the tree flourishes. The cocoa grown in British Guiana contains a somewhat larger proportion of alkaline than is usually the case, and thus an excellent price should be obtained for cocoa exported to the European markets. All Citrus fruits grow well, particularly the lime, and there is no apparent reason why British Guiana should not become one of the most important producers of limes and their products in the world. With a regular service of steamers fitted with refrigerating chambers, there are many possibilities as regards other fruits such as the banana, pineapple, guava, orange, grapefruit and many others, all of which grow well and the starting of a fruit canning industry is another opening for the capitalist. It should be remembered that British Guiana is outside the hurricane zone, and therefore, there is no likelihood of the fruits of years of labour being destroyed in a day.

The cultivation of rubber is another of the future industries of British Guiana. There have been experimental plantations of the Para rubber tree, but unfortunately the young trees were attacked by Para rubber leaf disease. The yield from the older trees compares favourably both in quantity and quality with plantation rubber of the Straits Settlement or Malaya. Balata, a near relation of the rubber tree, grows wild throughout the Colony, and this product is one of the staple exports.

TIMBER.

All the great forests, which cover 78,180 square miles, or 87.4 per cent. of the total area, are full of valuable timber woods as yet scarcely touched by the hand of man.

These include dye-woods, resinous trees, mahogany and other cabinet woods and timber such as greenheart and mora suitable for wood-paving, railway sleepers, and harbour work. There are many other softer woods which present great possibilities to the paper maker, and in all probability British Guiana is destined to be one of the great Empire producers of wood pulp. Such trees grow exceedingly quickly in the salubrious climate with its abundant rainfall, and there is no reason why with judicious planting, wood pulp factories should not obtain an inexhaustible supply of their raw material.

It is of interest to note that during the course of the Empire Forestry Conference in Canada during the summer of 1923 an important committee of experts was convened at the request of the Duke of Devonshire, Secretary of State for the Colonies, to enquire into the forest situation in British Guiana. The committee comprised Professor R. S. Troup, C.I.E., Prof. of Forestry at Oxford University, Mr. G..E. S. Cubitt, Conservator of Forests of the Straits Settlements and Federated Malay States, and Mr. J. R. Ainslie, Senior Conservator of Forests Nigeria, with Major R. D. Furse, D.S.O. of the Colonial Office as chairman. In their report the Committee pointed out that 19,000 square miles of forest may be classified as "accessible" an area which would be greatly increased by railway development into the interior. The report also says "The British Guiana forests are the sole known source of the world's supply of Greenheart. This timber, as is well known, is one of the most important utility timbers of the world and is in special demand for shipbuilding, wharf construction, fishing rods and other purposes. There are also other valuable species including cigar-box Cedar, British Guiana Mahogany, etc." These forests the experts declare with cautious moderation are of very considerable value and "their potential value is considerably enhanced by their propinquity to the large and expanding markets of the United States of America and by the evidence that these markets are turning more and more to Central and South America and other tropical markets to supply their own deficiencies in hardwoods." It appears probable, therefore, that if British capitalists do not soon turn their attention to the development of the potential wealth of the British Guiana forests, they may be forestalled by the United States.

The Forestry Branch is presently controlled by the Commissioner of Lands and Mines but during 1924 a separate Forestry Department will be inaugurated, comprising a Conservator of Forests, Assistant Conservators, Superintendent of Forest Surveys, Forest Surveyors and the necessary Clerical Staff.

Tobacco used to be one of the exports but is now little grown. Schomburgh, writing eighty years ago, declared that some samples of roughly cured tobacco which he obtained from Indians in the interior were declared by experts to be equal in aroma and flavor to the best Havana leaf tobacco.

Immense quantities of valuable fibres, Pita Hemp, Agave, Bromelia, Nidularium and many others are at present running to waste; although some of the Pita was used by early traders to Guiana and small quantities are used at the present time by the natives for making rope, fishing lines, hammocks, etc. Other vegetables, products which grow lavishly are various yams, sweet potatoes, peppers, ochroes, arrowroot, ginger, vanilla, cinnamon, nutmegs, cassava and tapioca.

Cotton is another product to which Lancashire some day may turn its attention; and the production of alcohol for power purposes from the by-products of sugar manufactured is another industry of great possibilities.

MINERALS.

The progress and development of gold and diamond industries are dealt with at considerable length elsewhere, and it is not necessary here to say much about them. It should be borne in mind, however, that the Colony has never been properly prospected by experienced experts. Practically the whole of the diamonds found to-day are found by the Negroes, quite ignorant of Geology. The workings are practically speaking all alluvial. The discovery of extensive deposits or mines is a daily possibility, and probably such an event would produce an influx of population which might go far to solve the labour problem. From districts widely apart, the discovery has recently been announced of platinum, but this lacks confirmation. Other precious metals and gems probably await discovery by a prospector versed in geological indications and able to recognise them when he sees them. Manganese ore, Monazite, and other valuable ores are being located. Mica of the finest quality has also been discovered and only awaits development, and there are large deposits of Kaalin which is almost chemically pure and offers a promising basis for the creating of China factories to supply the needs of the whole West Indies which are at present entirely dependent upon imports of pottery.

LOCAL INDUSTRIES.

There are many openings of great promise for the establishment of local industries. At present there are two foundries in Georgetown and one in New Amsterdam. There are two match factories using wood of local origin, also a small soap factory, ice factory, two biscuit factories and a tannery, where local hides are tanned and boots and shoes made. There are also the usual aerated water factories, and one for the manufacture of chocolate and confectionery.

There are openings for the establishment of brick and tile kilns, steam laundries, factories for the preserving of fruit and vegetables and good up-to-date dairies for the supply of reliable and pure milk. There are also opportunities for the establishment of factories for the manufacture of paper. There is great scope for poultry farming to supply the Georgetown market. Probably no colony in the British Empire possesses Hydroelectric resources such as may be found in British Guiana. The Cuyuni, Demerara, Essequibo and other rivers are all potential sources of energy whence all the power needs of the sugar industry and many other industries might be supplied. An expert detailed by the Government to examine the possibilities of Hydro-electric schemes has estimated that the total of 24-hour horse-power that could be developed from natural head from the lower falls of the three rivers is not less than half-a-million horse power. This figure could very largely be exceeded by taking advantage of the many falls and rapids on these great rivers. At present the Colony imports coal to the value of at least £30,000 annually, practically the whole of which is used for power purposes.

Systematic Survey - A systematic economic survey will be commenced in 1924 extending between the Essequibo and Cuyuni Rivers and passing through the diamondiferous area. In addition to investigating the mineral and forestal potentialities of a tract of country which is now practically unknown, this survey will form a part of the framework survey of the Colony to be carried out in succeeding years.

Conclusion. - Finally come the larger opportunities presented by railway schemes developing the interior. British Guiana is a poor colony. There is no large amount of surplus wealth to back up the unlimited confidence which all the Colonists display as to the great future that lies before their country. Therefore, capital for large schemes must come from outside, and preferably from Great Britain or the Empire. To a

capitalist or combination of capitals with large monetary resources a great opportunity is presented. Land in exchange for services in railway development could doubtless be arranged on satisfactory terms, and that land might be either valuable forests, breezy savannahs suitable for cattle raising, or diamondiferous or auriferous country which would bring a rich return. The first new Hinterland railway would probably serve the scattered diamond diggings, where 10,000 to 15,000 men are engaged in sifting the alluvial deposits in and around the creeks and rivers. Motor roads and motor transport services to the interior also present alluring prospects to the capitalists.

Altogether British Guiana presents a rich field of possibilities and probabilities, and not a few certainties to the enterprising capitalist. Unlike most of the West Indian Islands, it is as yet undeveloped save on the coastal belt, the source of the famous Demerara Sugar. There is vast scope in its mineral wealth, in tropical agriculture of various kinds - Sugar, coffee, coconut, rubber and other plantations - in domestic industries, as yet almost nonexistent, and in the task of improving its means of communication. There is room for millions of new population. When the people come in their numbers, as they must come sooner or later as the other empty spaces of the world fill up, British Guiana will quickly establish a just claim to the title that is at present little more than a pious aspiration – the " Magnificent Province."

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