

vessels. It is as brittle as hemp, and is more liable to be affected by the weather; but it is extremely strong, and durable, and consequently of very great utility. The annexed plate contains an Aloe plant, with the leaves cut, the central cup, and the skin, gourd, and scraper, used in extracting the sap.

#### COLONIAL PRODUCTS.

I come now to those productions, which are termed in Europe "Colonial produce," as being, usually, the growths of Colonies founded by the nations of the Old World in the warmer regions of the New, and supplying the parent States with those articles of luxury or necessity, which the climate of the Colonies is peculiarly adapted to produce.

In Mexico the principal articles are, coffee, tobacco, indigo, chocolate, and various kinds of vanilla and cochineal, of which Nature seems to have given to New Spain the almost exclusive possession. I shall begin with sugar, as being the only article of general consumption in Europe, the exportation of which, before the Revolution, was carried to any extent.

#### SUGAR.

Humboldt has endeavoured to fix the maximum of height at which the cane in Mexico may be cultivated; and to his scientific disquisitions I must refer some of my readers as are inclined to view



this part of the subject with interest. It is my own belief, that no general theory can be established; for, as I have stated in the first section, a thousand local causes, totally independent of elevation, may, and do, produce the degree of heat required to bring the cane to perfection. It is admitted, however, that the juice is more, or less, abundant, and rich in saccharine matter, in proportion to the height at which it is grown; and that the produce of a plantation in a valley on the Table-land, would not be equal, either in quality, or quantity, to that of a plantation of similar extent upon the coast.

Elevation has, therefore, some peculiar effects upon vegetation, even where external appearances are the same; but to what extent, and in what way its influence is exercised, it remains for future naturalists to determine. In general, it is thought that the sugar-cane requires a mean temperature of 19 or 20 degrees of the centigrade thermometer, (68 or 69 of Fahrenheit). Mexico possesses upon her Eastern and Western line of coast, a vast extent of country in which this temperature may be found; but as exportation was only permitted, before 1810, through the port of Veracruz, while the great body of consumers was concentrated on the Table-land, but little attention was paid to those situations, which were not within reach of one of these markets.

It is to the constancy of the demand in the Interior, that we must attribute the choice of the valleys

of Cuernāvaca and Cuautla Amilpäs, (within twenty leagues of the Capital,) as the seat of the principal sugar plantations of the country; and the fact, that these plantations have maintained themselves during the whole of the revolutionary war, while those of Orizava and Cördövä, on the slope of the Cordillera, which depended more upon the foreign market, fell into decay, as soon as the progress of the Insurgents put an end to all freedom of communication with the coast.

In the course of time, the increasing intercourse with foreign countries will, probably, create a change in this respect, and render the value of a sugar estate upon the coast at least equal to that of one in the interior. The number of vessels that now return in ballast from Veracruz insures a ready market, and although the rate of wages upon the coast is higher, the superior fertility of the soil will more than compensate this disadvantage.

Humboldt gives 2800 kilogrammes, or 224 Arrobas (of 25lbs) of raw sugar, as the produce of a hectare of the best land in the province of Veracruz, in situations favourable to irrigation.

That of Cuba does not exceed 1400 kilogrammes; so that the balance is as two to one in favour of Veracruz.

The immense amount of the capitals which have been withdrawn from the country since 1822, and the distrust which a recollection of the Revolution

still inspires, render any very speedy extension of the cultivation of the sugar-cane improbable.

Enough is hardly grown, at present, for the home consumption of the country, which is enormous. In 1802 it was estimated at 1,400,000 Arrobas, (35,000,000 of pounds;) the value of which, at the market price of two dollars and a half per Arroba, was 3,500,000 dollars, or nearly 700,000 sterling. In addition to this, in the years 1802, 1803, and 1804, sugar to the amount of nearly one million and a half of dollars was exported, and although the exportations afterwards diminished, the quantity raised up to 1810 was not supposed to have materially decreased.\*

At the present day, the amount of the total produce is not exactly known, but it must be considerably less than that of the best years before the Revolution, as the sugar estates are confined almost entirely to the valleys of Cuautla and Cuernāvaca.

\* Extract from "Balanza General del Comercio de Veracruz :

	Value of Sugar Exported.
1802 . . . . .	1,454,240
1803 . . . . .	1,495,056
1804 . . . . .	1,097,505
1809 . . . . .	482,492
1810 . . . . .	269,383
1813 . . . . .	19,412
From 1814 . . . . .	
to 1820 . . . . .	

Those of Ōāxācā, the Bāxīō, Vāllādōlid, and Gūā-dālājārā, were destroyed during the civil war, and the machinery has never been reestablished, so that the most distant provinces are obliged to draw their supplies of sugar from Cūāutlā; a circumstance, which, of course, limits the consumption exceedingly, by raising the price so as to exclude the poorer classes from the market. The present price of the Arroba of sugar in the Capital, is from three, to three and a half dollars, (twenty-four to twenty-eight reals,) which, taking the dollar as I have done throughout this sketch, at four shillings, and the Arroba at 25lbs., will give something more than sixpence a pound (English money) as the value of sugar in Mexico, within twenty leagues of the place where it is grown. When sent into the interior, the price rises with every twenty leagues, until, in Dūrāngō, the Arroba sells for six and seven dollars, and in Chīhūahūa, for nine and ten. This can only be remedied by a more equal cultivation of the cane in those situations, which are more especially favourable to its growth; and there is, perhaps, no Transatlantic speculation that would prove so advantageous as this, if properly conducted.

I was induced, by the proximity of the great sugar estates of Cuernāvaca, and Cūāutlā, to the Capital, to visit the valley in which they are situated. It lies at the foot of the first step, or terrace, on the descent from the Table-land towards the Pacific,

about 319 toises\* below the level of the Capital; and extends nearly fifty miles, in a direction from S.W. to N.E. The plains of Cūāutlā are considerably lower than those about San Gābrīēl, in the vicinity of Cuernāvaca; but, with the exception of a ridge of hills which divides the two valleys, the whole space from Īzūcār to Cuernāvaca is occupied by a succession of *Haciendas*, (estates,) all of which are in a state of the most beautiful cultivation. The valley abounds in water, both for irrigation and machinery, which last, in the opinion of a gentleman who accompanied me, and who is well acquainted with our West India Islands, is fully equal to that employed in the British Colonies, where steam-engines have not been introduced.

The crops are usually very abundant, the cane being planted much closer than is customary in Jamaica, but the ground is not exhausted by this system, as the Mexican planter is enabled, from the extent of his estate, to divide his sugar lands into *four* equal parts, one only of which is taken annually into cultivation. The remaining three lie fallow, until their turn comes round again.

The sugar produced, though abounding in saccharine matter, is generally coarse in appearance, and of a bad colour, being merely clayed, in order

\*This is the level of the town of Cuernavaca itself, but the plains of San Gabriel are, I should think, at least eighty toises lower than the town, and those of Cūāutlā approach nearer to the level of Īstlā, which is 664 toises lower than Mexico.

to free it from the molasses: the art of refining, though well understood, is seldom, or never, carried beyond the first stage of the process, there being no demand in the market for double-refined sugar.

The principal estates in the neighbourhood of Cuernavaca, are those of Tēmīscō and Sān Gābrīel, both of which belong to the family of Don Gabriel Yērmō, (a Spaniard, famous for the arrest of the Viceroy Iturrigaray, in 1808, with which the Mexican revolution may be said to have commenced :) Trēintă-pēsōs, El Pūēntē, Měăcătlān, Sān Gāspār, and Sān Vicente Chīconquăc. Those in the valley of Cuāutlă are San Carlos, Pāntītlān, Cōcōyōc, Căldērōn, Căsă-sănō, Sântă Īnēs, Cōhăhūistlă, Mă-păstlān, and Tĕnĕstĕpāngō. None of these estates produce less than 30,000 Arrobas of sugar in the year, while the annual produce of some of the largest may be estimated at from 40, to 50,000. The profits in a good year are very great, for, as each arroba of sugar yields an equal quantity of molasses, which sells at the door of the Hacienda for five reals and a half per Arroba, the sale of this alone is sometimes sufficient to cover the *raya*, or weekly expenditure of the estate, leaving only the wear and tear of the machinery to be deducted from the produce of the whole crop of sugar. From the molasses, 30,000 barrels of chīngărītō, or coarse rum, are made every year, in the neighbourhood of Cuernavaca alone. At Sântă Īnēs, where a private distillery is established upon the estate, in which

4,000 barrels are manufactured upon the owner's account, the speculation is found to be a very lucrative one, as the barrel sells in Mexico for thirty-two dollars, and is worth twenty-four net, after paying both duties and carriage.

The possibility of cultivating the sugar-cane beneath the Tropics by a system of free labour, has often been canvassed, but I know no country except Mexico where the experiment has been fairly tried upon a large scale. The plantations of Cuernavaca, were all worked, in the first instance, by slaves, who were purchased at Veracruz, at from three to four hundred dollars each. The difficulty of ensuring a sufficient supply during a war with a maritime power, and the number of slaves who perished from the sudden change of climate on the road from the coast, induced several of the great proprietors to endeavour to propagate a race of free labourers, by giving liberty to a certain number of slaves annually, and encouraging them to intermarry with the native Indians, which they soon did to a very great extent.

The plan was found to be so economical, that, on many of the largest estates, there was not a single slave in the year 1808; but the policy of the measure became still more apparent in 1810, for, as soon as the Revolution broke out, those planters who had not adopted the system of gradual emancipation, were abandoned, at once, by their slaves, and forced, in some instances, to give up working their estates; while those who had provided themselves,

in time, with a mixed caste of free labourers, retained, even during the worst of times, a sufficient number of hands to enable them to cultivate their lands, although upon a reduced scale.

The great Haciendas now expend in wages, and other current charges, from 8 to 1200 dollars a week.

The labourers are mostly paid by the piece, and can earn, if industrious, from six to seven reals per diem (three shillings, or three and sixpence, English money.)

The number of workmen employed upon an estate capable of producing 40,000 Arrobas of sugar, is one hundred and fifty, with occasional additions, when the season is late, or the work has been retarded by accidental causes.

They are divided into gangs, as in the West Indies, and appeared to me to perform their several tasks with great precision, and rapidity. Fifty men are employed in watering the canes;\* twenty in cutting; ten in bringing the cut canes from the field, (each with six mules;) twenty-five, (mostly boys,) in separating the green tops, which are used as fodder, and binding up the remainder for the muleteers.

Twenty men, in gangs of four each, feed the engine, day and night; fourteen attend the boilers; twelve keep up the fires; four turn the cane in

\* The Spanish names, in regular succession, are, Rēgādōrēs, Māchētērōs, Ārriērōs, Zācātērōs, or Atājādōrēs, Trāpīchērōs, Hōrnērōs, Cāldērērōs, Vōltēādōrēs, Alzadores, Pūrgādōrēs.

the sun, when the juice is expressed, and dry it for fuel; and ten are constantly at work in the warehouse, clarifying the sugar, and removing it afterwards, to the store-rooms, from whence it is sent to the market.

All these labours proceed without difficulty or compulsion, and the sound of the whip is never heard; but whether freedom will have the effect (as many hold here) of raising the workmen in the scale of civilization, is a question which I cannot pretend to decide. It is much to be desired, certainly, for a more debauched, ignorant, and barbarous race, than the present inhabitants of the sugar districts, it is impossible to conceive. They seem to have engrafted all the wild passions of the negro upon the cunning, and suspicious character of the Indian; and are noted for their ferocity, vindictiveness, and attachment to spirituous liquors. When not at work, they are constantly drunk; and as they have little or no sense of religious or moral duties, there is but a slender chance of amendment. They are, however, an active, and at intervals, a laborious race, capable of enduring great fatigue, and, apparently, well suited in constitution to the dangerous climate which they inhabit.

The valley of Cuernāvaca suffered much in the first years of the revolution, and particularly during the siege of Cuautla Amilpas, in 1814, when most of the neighbouring estates were destroyed by the contending armies. They have, however, recovered their losses during the last ten years, and I could

not discover that there was any reason to believe that the total produce of the valley ever much exceeded that of the present day.

The establishment of a *Trapiche* (a term which implies all the works requisite for a sugar estate) is attended with too much expense for me to venture to predict any very rapid extension of the cultivation of sugar; although, in thirty years, (from 1763 to 1793,) the number of *Ingenios*, (sugar plantations,) in the island of Cuba, increased from seventy, to three hundred and five; and, in ten years more, (1796 to 1806,) rose from three hundred and five, to four hundred and eighty: but this was occasioned by an influx of planters from Hayti, who brought with them both capital, and science; whereas, in Mexico, the men who possessed the largest share of both these essential requisites, (the old Spanish proprietors,) have quitted the country, and abandoned, in many instances, whatever property they could not realize. This is a drawback, for which the present freedom of intercourse with the Old World cannot afford any immediate compensation. That it will do so, ultimately, I cannot doubt; for the advantages of this mode of investing capital must long be great, in a country where the home consumption alone has kept the price of sugar, during the last ten years, at nearly double the average market-price in the Havanna,\*

\* The prices at the Havanna averaged, from 1810 to 1815, sixteen to twenty reals per Arroba; in 1822, from ten to fourteen reals; in 1826, from nine to thirteen, or twenty-four dollars the case.—*Vide* Humboldt, *Essai Politique sur l'Île de Cuba*.

and where the system of free labour renders the expense of working the estate infinitely less. That it does produce this effect, seems to be proved by the fact, that one hundred and fifty slaves are employed, in the Island of Cuba, upon a plantation capable of producing one thousand cases, or 16,000 Arrobas of sugar, (*vide* Humboldt *Essai Politique sur l'Île de Cuba*;) while, in the valley of Cuautla, one hundred and fifty free labourers are found sufficient for a Hacienda, which yields from thirty-two, to forty thousand Arrobas. Thus, (supposing the expense in other respects to be the same,) in the one case, the produce of each individual would be 2666lbs., and in the other, 5332lbs., or even 6666lbs., taking the maximum of 40,000 Arrobas. The correctness of this calculation, depends, of course, upon the comparative fertility of the soil in the island of Cuba, and in the valley of Cuautla Amilpas, respecting which I am not competent to give an opinion. There is no reason, however, to suppose that there is any superiority in the soil of Cuautla, sufficiently great to account for so marked a difference in the amount of the sugar, raised by an equal number of labourers; for the elevation of the valley above the level of the ocean, renders it impossible to apply Humboldt's estimate of the extraordinary fertility of Veracruz, to the plantations of Cuautla, or Cuernavaca.

I regard all these points as well worthy the attention of capitalists, and it is with this view, and not with that of raising upon them any theory of

my own, that I have made them here the subject of particular consideration.

#### COFFEE.

Coffee is another of the Tropical productions, for which the soil of Mexico is admirably adapted, and which is likely to be cultivated, almost immediately, to a great extent, because the capital required to establish a plantation is comparatively small.

Coffee has, however, never formed an article of exportation in New Spain, nor has the use of it been very general in the interior of the country, until within the last few years, when the large returns derived by the merchants of the Havanna from their *Cafetales*, or coffee grounds, induced some of the Mexican proprietors to turn their attention to this branch of colonial agriculture.

In 1818 and 1819, extensive plantations of coffee were laid out near Córdovă and Őrízăvă, to which constant additions have been made during the last three years.

The tree has likewise been introduced into the valley of Cūautlă, by Don Antonio Velasco, and into that of Cuernăvăcă by the Agent of the Duke of Monteleone; who possesses, as representative of the family of Cortes, the large estate of Ātlăjōmūlcō, in the immediate vicinity of the town. The two estates of Velasco, at Cōcōyōc and Păntītlān, contain about five hundred thousand coffee plants, fifty thou-

sand of which were in full produce when I saw them in 1826. The crop of the preceding year amounted to five thousand Arrobas, or 125,000lbs., which gives two and a half pounds of coffee as the average produce of each plant. I am induced to believe that this will be the ordinary produce of good land throughout Mexico: it considerably exceeds that of the Havanna, where Humboldt gives 860 *kilogrammes* as the average of a *hectare* of land, containing 3500 plants; but it is a much lower estimate than any Mexican planter would make, as, in many parts of the country, from three to four pounds are said to be a fair average crop. I could not ascertain, however, that this calculation was founded upon correct data; and I do not, therefore, give it as one that may be strictly relied upon: but I know one instance, of a single coffee tree, having produced twenty-eight pounds of coffee, in the garden of Don Pablo de la Llave, at Cordova, and it is the certainty that this fact is unquestionably true, that induces me to give as the possible average of good grounds in Mexico, a produce more than double that which, in the Island of Cuba, is the maximum of the best year in three.

The cultivation of coffee in New Spain possesses, at present, many advantages over that of sugar. The Arroba sells in the capital at from five, to seven dollars, (nearly double the price of the Arroba of sugar,) and may be raised at a much less expense; as a plantation, containing 200,000 plants, does not



require the permanent attendance of more than twenty men to weed and water.\*

The young plants, however, are delicate, and must be protected from the sun for two whole years, for which purpose a large piece of ground, called the *Sēmīllērō*, is covered in, and thickly planted with young shoots; the third year these will bear transplantation to the open field, and the fourth they may be reckoned in full vigour; they last from twenty-five to thirty years. From the attention which is now paid to coffee plantations throughout Mexico, it is probable that coffee will soon be added to the list of her exportations, in which case the European market will, undoubtedly, draw from New Spain a very considerable addition to the supply now derived from the West Indian Archipelago; for, although the islands have the advantage of being already in possession of the market, Mexico has that of attracting annually to her shores a vast number of European vessels, to all of which a return cargo is an object of no little importance. The slope of the Eastern Cordillera is well calculated to supply this, by its vicinity to the coast as are the Peninsula of *Yūcātān*, (in which a few small coffee plantations already exist,) and the State of *Tābāscō*, where coffee,

\* Ten *regadores* (waterers) and ten *escardadores* (weederers) are the allowance for a plantation; but in addition to these, from fifty to sixty men must be employed in collecting the crop, and as many more in cleaning and pruning the trees afterwards, (*la poda*;) but these operations do not last above three months.

which was originally cultivated merely as an appendage to the cacao plantations, is now considered as a separate branch of agriculture, and has already been grown, and exported to some extent.

The plantations of *Cuautlā* will be excluded from the foreign market by the distance, and the difficulties of communication; but they will supply the whole consumption of the Interior, which is daily increasing.

Of the rapidity with which the cultivation of coffee may be extended, the *Havanna* has furnished a memorable example.

In the year 1800, the island only contained sixty plantations, in 1817 it possessed seven hundred and seventy-nine, and at the present day the number is estimated at nearly nine hundred.

The total produce was,	Arrobas
in 1804	50,000
in 1809	918,263
from 1818 } to 1824 }	1,218,000

This extraordinary impulse was communicated by events not calculated to exercise so direct an influence upon the prosperity of the country, as those which have taken place in Mexico, where the bonds by which the internal resources of the country were so long cramped, have been burst at once. It was the ruin of *St. Domingo*, and the relaxation of the Colonial System in Spain, that led to the prosperity of the *Havanna*; nor is it assuming much, to suppose

that a free trade may produce a similar effect in a country, even more favoured by nature than the Island of Cuba. The want of a market need not be apprehended, for the consumption of Europe appears to increase every year, and will, probably, continue to do so, as the supply augments, until the price falls to that point, at which the planter would cease to derive any advantage from his labours. What this point is, has not yet been ascertained. According to Humboldt, coffee has varied, at the Havanna, during the present century, from thirty, to four dollars the quintal, (of four Arrobas.) From 1815 to 1819 it was constantly between thirteen and seventeen dollars; now it is only twelve, and may be expected to fall still lower.

In the interior of Mexico, it was worth, in 1826, from five, to seven dollars the Arroba, (twenty and twenty-eight dollars the quintal,) but this value it will, of course, lose as the cultivation extends. On the coast, I have little doubt that the coffee of Cordova might be sold, already, at the same price as that of the Havanna. The quality, is in general, excellent, and equal, in the opinion of the best judges, to that of any other country in the world.

## TOBACCO.

Mexican tobacco is chiefly important as an article of revenue. The plant is a government monopoly, and the growth of it is confined to a small district in the vicinity of Ōřizāvā and Cōrdōvā.

It is, therefore, not likely to become an article of exportation, and is only interesting to European commerce, from the quantity of paper used in the segar manufactories: of these, as well as of the mode in which the Tobacco monopoly is conducted, I shall have occasion to speak elsewhere. The quality of the plant in New Spain is thought to be inferior to that of the Havanna.

## INDIGO.

*Anil.*

The use of this plant was general among the Aztecs before the conquest: they called it Xiuhquilipitzahuac, (the pronunciation of which would be an admirable *coup d'essai* for any one who may desire to cultivate the Ayttec tongue.) During the last century it has been almost entirely neglected, from the preference given in Europe to the indigo of Guatemala, or Central America, and the failure of the native cotton manufactures, in which it was principally used. A little indigo is now grown on the Western coasts, and an attempt is making to introduce it into the valley of Cuautla; but, upon so small a scale, that many years must elapse before it can possibly rise into importance. In Yūcātān, there are some plantations of indigo, and in Tōbāscō, according to the statistical report transmitted by the State to Congress, it is a natural production of the soil, which is marshy and hot. Indeed, from the vicinity of Tabasco to the great