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ESSAY

ON THE

CULTIVATION

AND

MANUFACTURE OF COFFEE,

FOR WHICH THE PRIZE OFFERED
BY THE

ROYAL AGRICULTURAL SOCIETY,
(*Jamaica*),

WAS AWARDED

TO

W. H. MARAH.

"INFERIOREM NE REJICIAS."



COLOMBO:

PRINTED AT THE OBSERVER PRESS.

1849.

Price One Shilling.

SB269

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(From the Jamaica Times and Royal Agricultural Society's Reporter.)

ESSAY

ON THE

CULTIVATION & MANUFACTURE OF COFFEE.

FOR WHICH THE PRIZE, OFFERED BY THE ROYAL AGRICULTURAL SOCIETY, HAS BEEN AWARDED TO W. H. MARAH.

"Inferiorem ne Rejicias."

THERE is no species of cultivation within the tropics, which opens to the mind of man, a more pleasing prospect and more agreeable work for its contemplative powers, than that incidental to the Coffee Tree.—From the period, at which the plant is first committed to the soil, till the tree has arrived at maturity, the various changes which nature undergoes, afford much for our admiration; but the time when the latter is most heightened, and wonder even ensues, is at the application of science and skill, by means of the pruning knife, when nature assumes her beautiful dark green foliage, and the branches appear neatly arranged in their due order. A small shrub of a delicate and unpromising nature at first, has now grown to a sturdy tree, which is ready to show its gratitude for the care bestowed on it in its tender years, by yielding its increase one hundred fold. But

to the shame of those who neglect it, be it said, that the tree, when established, is of an unusually hardy nature, and nothing but the most culpable carelessness or palpable ignorance, is sufficient to injure or destroy it.

The due cultivation of the Coffee tree, so as to obtain from it yearly a certain quantity of fruit, without distressing the parent too much, has been a subject of immeasurable importance to those persons engaged in its study; but a considerable diversity of opinion has occurred as to the best means to be adopted to gain the desired object.—This being acknowledged, it cannot be wondered at, that I should approach the subject of the present Essay, with much diffidence, and with all due deference to the opinions of those who have preceded me, and with whom I may differ. I purpose therefore, to give the result of my own experience acquired from the management of Coffee properties for several years, during which time I applied myself strictly to arrive at the best mode of cultivating Coffee fields, to insure a good annual return from them, and the most effectual manner of manufacturing the produce so obtained, with a view to the improvement of its quality, in order to attain profit and pleasure.

The Coffee Tree, according to Botanists, is thus described—“*Coffea Arabica*, or *Jasminum Arabicum*—a genus of the Pentandria order, belonging to the *Monogynia* class of plants, but ranking in the natural method, under the order of *Rubiaceæ*”

Upon the authority of Monsier Raynal, we are assured that the Coffee Tree came originally from Upper Ethiopia, where it was known

from time immemorial, and where it is said to be still cultivated with success. M. Lapinco de Mejières states, that he found the plant in the Indies, and made frequent use of its fruit; which was rather larger than that which was produced in Arabia, at the commencement of the cultivation of this tree, towards the end of the 15th century.

We are indebted to the Orientals for our knowledge of the use of Coffee—we are told that its qualities as a beverage were first discovered by the superior of a Monastery in Arabia, who, wishing to keep his Monks awake to perform the duties of the choir, was induced to make them drink of the infusion, in observing the effects which it had on the goats.—Some people pretend, that its use took its rise from a Mollah, of the name of Chadeley, to divest himself of a drowsiness which enthralled him, and prevented his attending to his night devotions. Constantinople was the first place where public establishments were instituted for the use of this beverage—but these became the haunts of the idle and disengaged, politicians, poets, and Mollahs; and the discussions which ensued at such frequent and promiscuous assemblies, became so alarming, that in the reign of Amurat the third, the Government interfered to suppress them. Edicts to that effect were issued at several periods; but the custom of drinking Coffee had become too established, to be thus eradicated. The influence of Religion was even resorted to, for the purpose of discouraging the use of this harmless and refreshing beverage. In the year 1423, (920 of the Hegeria) a sermon was preached against

its use, by one of the Mahometan Doctors, which resulted in the persecution of the Coffee drinkers. A meeting of the Divines was however, called to decide on this momentous question, and they solemnly declared that there was no criminality in drinking Coffee, from which period, the use of it has been allowed to all true Believers.

It was not till the middle of the 13th century, that the use of Coffee was introduced into England. But since that period, the taste for it has gradually extended, and it has now become a necessary of life.

The Dutch, the most enterprising commercial nation of the 17th century, were the people who first brought the Coffee plant from the East, and introduced it into Europe. They originally obtained the plant in Mocha, transferred it to Batavia, thence to Amsterdam, and at the commencement of the 18th century, Louis 14th procured a plant from the latter place, which he transplanted in the Jardin des Plantes, whence it was distributed to all the French Islands; but it was first sent to, and cultivated in the Island of Martinique.

The best Coffee still comes from Mocha and Aden, hilly districts in Arabia Felix, where there are still large plantations. In the cultivation, it has been asserted by travellers in that country, the Coffee trees are never topped and no attention is paid to pruning, the planters contenting themselves with removing the dead or broken branches and suckers which spring from the root. When the exposure is too warm, they shade their trees by planting their fields with a species of poplar: and when the berry is ripe, they spread pieces of

cloth below each tree, in which the ripe fruit is collected by shaking it. They do not pulp their Coffee, but having dried it on mats, they remove the hardended envelope by the mill.

According to Jamaica historians, the Coffee plant was introduced into this Island about the year 1728, and the first plantation was established on Temple Hall Estate, in St. Andrew's. There are many persons still alive here, who recollect when the whole Island did not produce as much as *one* of the large Coffee properties, in a favored district, during the time of slavery.

On the first establishment of Coffee plantations in the West Indies, the trees were allowed to grow up in their primitive state; — that is to say, the plant was put in, in the usual manner, and kept clear of weeds; but no means were taken to ascertain whether science could be applied to its cultivation, so as to render the tree more fruitful and profitable. It was, therefore, permitted to grow to the height of ten feet and upwards, as far as the richness of the soil would extend it. Fields are yet to be seen in many parts of St. Andrew's and St. George's where nature has taken her own course, and where the trees grow in suckers to nearly twelve feet. These suckers, in good seasons, bear prodigiously, and, after they are relieved of their fruit, die away, and give place to a new vegetation of the same description. Among the French refugees who came over from Haiti to this Island, at the time of the revolution in that ill-fated country, this system of cultivation prevailed; but they were induced to alter that

course of management, and to resort to the use of the pruning knife.

The topping of the tree also assists in the reaping of the fruit, for in order to obtain the ripe Coffee from these tall trees, the laborers have generally to use long crooks, to bend down the branches, and thus the latter, when heavily laden, are entirely destroyed, in the endeavour to pick off a few ripe berries.

We have no historical data by which to ascertain when the topping of the coffee tree was first instituted, or when the use of the pruning knife was applied. One circumstance however goes to prove that science has been brought to bear on the cultivation of the tree for upwards of half a century; for there are fields now in existence; of that age, and which show the usual symptoms of having been topped and regularly pruned from their establishment.

The soil best adapted to the cultivation of the coffee tree is the "loose gravelly or stoney," and the "chocolate,"—but the tree sustains life, and yields fruit, though not to a great extent, in other soils. The rich black mould is peculiarly favorable to the coffee tree, and will produce it, like other fruit trees, in perfection, in a seasonable climate: but I have seen fields established on rich soils throw out an immense foliage; always appearing green and beautiful, and yet producing no fruit. An instance of this kind is to be found in a high field in Saint David's, called Windsor. A clayey soil harbors damp in wet weather, whilst it becomes dry

and sterile at the opposite change, and stops vegetation in the tree. It is not unfrequently mixed with a stratum of marl, to which so soon as the roots of the tree arrive, decay ensues—the first indication of which is to be observed in the yellowness of the leaves, which soon become shrivelled, till at length all drop off, nature yields, and life becomes totally extinct. In my experience I have seen large patches of coffee die off after this manner—without any apparent possibility of accounting for it, but on digging down to the lower roots, the marley stratum of which I have spoken, is to be found. A plan was resorted to by an experienced planter, to re-establish a field, which had thus died away; he caused a small quantity of whitelime to be thrown into the hole (which was always dug very large) intended to receive the young plant, together with a portion of the upper soil. The tree grew, and bore for a series of years; but again became the victim of the marl. It would, therefore appear that the warmth of the lime had been absorbed by the chilling dampness of the marly stratum, and that the latter availed itself of its power to communicate its deadly breath to the roots of the tree.

In virgin lands, after the usual preparation of felling and clearing away the wood, the Coffee plant is put in, in the following manner:—the land is lined off into rows of from 6 to 7 feet square, as the richness of the soil and the prospects of climate may warrant. At each square, pegs are inserted in the first instance to denote the spot assigned for the reception of the plant,

and the persons engaged in putting in the young suckers, follow on with a delve, and as the peg is removed, a hole is made about eighteen inches deep, into which the plant is inserted, and the earth piled gently about it, leaving from six to eight inches exposed above the surface of the earth. Formerly it was customary to raise nurseries from the seed, whence a regular supply of young plants could be obtained in the laying out of the new fields—but these have fallen into disuse, from the quantity of young trees which are to be found growing wild on thrown up lands or plantations, the growth of berries which are taken from cultivated fields by the birds and rats. The quantity of fruit which is annually lost to properties by sundry causes, such as careless reaping, birds, rats, &c. form of themselves nurseries under the trees, and these furnish plants—but on all well-managed properties, these latter nurseries should be eradicated, as they tend much to impoverish the soil, and to rob the tree of that aliment which is essentially necessary to its preservation and longevity.

The suckers are drawn, trimmed of their roots, and cut about two feet long. Good stout stumps are generally preferred, as they vegetate with greater strength. Plantations were formerly established from the seed in the first instance—but I have not known within the last fifteen years, such a course to have been pursued.

It was customary to plant corn, peas, and provisions through all young fields, till the trees were about three years old, but the great alteration which has taken place in plantation economy since the emancipation, has been such

as to abolish this practice. I do not think that either corn or peas do any injury to a young field—but provisions decidedly tend to exhaust the soil and keep back the young plant.

Young fields require immense care, in consequence of the rankness of the weeds which spring up in all new soils. It therefore becomes necessary to clean them at least four times per annum; and at each cleaning, it is requisite to supply all the plants which have not taken, in order to insure a perfect and regular field. A small eye is the first symptom of vegetation which attracts the observation, then a bud, a couple of leaves, and joints and leaves follow in the course of nature's operations.

The young tree shoots out its lateral branches at each joint, which follow in regular succession, till the tree arrives at the height of four feet six inches. It is at this period when science is first called into action, by the topping of the tree, which is performed by cutting off the six inches with a knife, so as to form a tree of four feet. This operation has a wonderful effect on vegetation, the branches in their turn, begin to throw out buds, which in time become the limbs termed collaterals; and, in the course of eighteen months, the tree will have arrived at its full bearing point, forming a spectacle of amazing beauty and order, and presenting a remarkable pea-green hue.

In late years, since virgin lands, adapted to the growth of the Coffee Tree, have become so distant from the works, trials have been made on plantations, to establish fields on thrown up lands and old negro grounds.

Much success has attended the latter attempt,

but the trees do not grow to within one half the size of those planted on new soils. Lands situate contiguous to the works might be established in Coffee, by the aid of manure, however poor the soil may be, but immense care and attention will be required to effect it.

Trees, after being topped throw up suckers from each joint, but more especially at the head. These must be removed at each cleaning as they grow rank, and rob the tree of its support. The wood of a Coffee tree is of a greenish color, and rather soft, when young; but as it ripens, it assumes a brownish and hardy appearance. In topping young fields this appearance must be strictly attended to, and the trees should not be topped till the wood has ripened at the cutting point. I have known young fields, almost ruined, by being topped too early, before the wood had sufficiently ripened. As young trees commence being planted, and as they generally bear heavy at the time of topping, it stands to reason, that unless the mother stem be sufficiently ripe to bear the weight of the branches loaded with fruit, the unripe portion will wear away, and thus the tree and fruit will be destroyed.

The climate as well as the seasons vary so materially in this island, that the growth of the tree, as well as its cultivation, must differ according to its peculiar locality. In the parishes of St. David, Port-Royal, and St. Andrew, where the Coffee tree flourishes best, and from whence the best quality of the article is produced, an entirely different system of management is pursued to that which prevails in Manchester, St. Elizabeth's and St. Thomas in the Vale.—In

the former district, the tree does not come into full bearing, before it is seven years old, whilst in the latter, this takes place in one half the time ; and the longevity of the tree bears a more remarkable difference ; in the one, fields are to be seen now in cultivation upwards of half a century old, whilst in the other fifteen years may be taken as the mean age. Soil does not of itself create this strange difference, as the same indications of favorable moulds are to be seen in each district, but it may the rather be attributed to the difference of climate. In the upper districts, where Coffee plantations have been established below the range of the Blue Mountains, the temperature, though cold and bleak, is dry and healthy, whilst in St. Thomas in the Vale, where the lands lay considerably lower, the atmosphere is warm, though damp, and visited with a continuous supply of rains and fogs.

The most difficult and yet highly important portion of plantation management, consists in the due attention which is required to keep the fields regularly and properly pruned. This is a subject upon which planters are seldom found to agree—each one has his own peculiar system of pruning : some recommend heavy cuttings, others slight pruning, and not a few no pruning at all. Amid such a jargon of opposite opinions, we must adopt the motto—“in medio tutissimus.” In my opinion, one of the many evils which has been inflicted on this country, has resulted from the injudicious and indiscreet mode of management which was pursued upon plantations. Whilst large tracts of woodland were at command little or no attention was paid to the keeping in cultivation of old esta-

blished fields; these were allowed to run into waste, to give place to the large returns which were anticipated from a new and rich soil. Indeed I may safely say on this point, that the usual indication of Jamaica characteristics was palpably evident, viz., to live for one's self, and not to think of posterity. Acting under this spirit, plantations were run over, and considered worn out in the course of a few years, whilst, with a proper degree of care and precaution, they might have retained their names, and kept up their crops for a series of years. The pruning system then adopted, tended much to accelerate the ruin of properties. As labor was abundant, it was customary to commence pruning at an early season, before the crop was taken off, and the destruction of a few tierces of produce, at the fag end of the crop, was considered of no consequence. By dint of heavy and severe cuttings, the trees were forced to the utmost of which nature was susceptible, into copious vegetation. This exuberance of young wood, the tree could not sustain to perfection, and the major portion was therefore consigned, in turn, to the fate of being torn away by the openers, to perish to secure some ventilation for the tree. Thus was that undone, which nature had been forced to perform. These heartless bleedings were repeated year after year till nature was exhausted, and the tree would yield up the ghost. This system of management came under my own observation, which has induced me to allude so pointedly to it—more so as it was set up as the *ne plus ultra* of planter-ship by those who had numbered their eighteen and twenty years experience in plantation management.

When fields have been neglected for years, it becomes absolutely necessary to resort to severe pruning to re-organize the tree; for it stands to reason, that constant vegetation irregularly kept up, must choke the trees; and prevent ventilation: while the decaying and useless branches would still spring, and draw sustenance from the good and regular. And as the tree continues to bear yearly however little, it must become one mass of vegetation and irregularity. Such being the case, it is impossible that the bearing wood can attain perfection; but be the rather stunted in its growth, and become useless and unprofitable.

There can be no specific rules laid down for the guidance of the uninitiated in the art of pruning. General rules might be spoken of but they are so liable to be interfered with in their application, by constant changes in the climate and the seasons, as to render their intent unavailable. In my opinion, the best mode of management is discernible in him, who takes advantage of the appearance of nature, by an application of his skill, when that is required to assist the tree in nature's operations.

The tree, as I have before observed, throws out lateral branches in the first stage of its growth. These are called primaries, and should they be cut off, or broken from the stem by accident, their place can never be supplied by a growth of the same kind. Suckers and "gormandisers," of which I shall hereafter speak, take their place. The collaterals which strike out in a lateral direction from the primaries, subsequently become the legitimate victim of the pruning knife, after their bearing. But it often happens,

that as nature promiscuously supplies this vegetation, a larger corp of collaterals might be generated, and draw more aliment from the tree, than it is able to support, and bring the fruit to perfection, so it becomes necessary to resort to science, and to select that portion of the wood which is healthy, strong, and regular, and take out the puny irregular, and superfluous.

All shrub trees require a certain amount of respiration, to conduce to their health and vigor. With the coffee tree, it is indispensable to its health and life, that a constant and regular circulation of air should be transmitted through the body, and to this view it is necessary that the heart of the tree should be kept entirely free from vegetation. After a severe pruning, the vegetation is rank, and studded. The prudent planter watches his opportunity, and so soon as he perceives the young wood of sufficient growth, to admit of an exercise of judgment in its selection, he directs the opening to be performed. The heads of the trees are first to be stripped of all vegetation, so as to form a clear area of at least six inches from the original stem, afterwards all that which runs transversely; and as the opener proceeds, he takes out every thing which appears "spindly" and stunted leaving the rich healthy "black" wood to produce the crop.

When fields are kept in "good order," by light annual prunings, there are always two growths of wood to be seen coming on—the first in advance and ripe for the crop, and the second shooting out, to ripen for the ensuing year. My own principle has been to follow this course, so

as to obtain an average bearing annually from the fields which had been committed to my care and management

The climate of Jamaica varies so materially in its different localities, that no distinct period can be stated as the most favorable for pruning. In those altitudes, where the coffee trees vegetate almost all the year, round, I have known pruning to be performed during the whole period. It stands, however, to reason, that there are certain periods in the year, when the sap lies dormant in the tree, and not the slightest spring is perceptible. If the object be to obtain a copious and healthy supply of young wood, I do not think that season suitable to the purpose--as I have observed fields pruned in November and December, remain in a dormant state, and not throw out a single particle of young wood, till the spring of the ensuing year. The months of May, June, July and August, have formed the season in which I observed the pruning to act beneficially on the Coffee tree, in the upper districts where I was principally located. But it has oftentimes happened that in a late crop, the fruit is not taken off by August, consequently the pruning had to be delayed to the months of September and October, after which period I consider the cutting a field for wood perfectly valueless, and a mere waste of labor and money.

There is no doubt that the pruning knife should be administered to the tree as early as possible after it has been relieved of its fruit. It has occurred to me, however, that this resolve should be contingent on the seasons, and the state of the trees after their bearing. If

the weather has been peculiarly seasonable with a heavy crop, vegetation will have commenced before the fruit is entirely reaped, or more properly speaking, about the end of the crop. In this case no harm can result from an immediate application of the pruning knife; the same course would also be equally justifiable, when the fields have given but an indifferent return, and are in no wise distressed. Taking an opposite view of the case, however, the subject appears to me to wear a totally different aspect. If the field has borne heavily, and appears distressed, presenting a mass of "white" and almost lifeless wood, I should think an immediate pruning highly injurious, for it stands to reason that it would be compulsory in the pruner to cut away all the old wood, according to the strict rules of pruning, and the tree would as a consequence be left totally bare, and could not possibly give any return for two years at least. Now, had a small respite been afforded the field, till nature had somewhat revived and vegetation ensued, the pruner would be enabled to see what should really be taken out—some portion of the old wood would thus be saved, which would give a small return for the ensuing crop. A circumstance of this nature came under my own personal observation in the year 1840, when I was residing on a large Coffee property, the fields of which were situated high, just below the Blue Mountain Peak, and the result tended to confirm me in the opinion which I have here set forth. In that year, there was an exceeding drought throughout the country in which the district of my location shared; but we were protected from its baneful influence by the heavy night

dews which fell, and which tended to preserve a little moisture. The weather during the preceding year was also rather dry in that district, and as such was rather favorable to so wet and cold a climate, the crops of 1840 were therefore rather large, doubling nearly those of several years' preceding. The property which I managed made its 66 tierces, my neighbour of the adjoining property made the same crop, and indeed the whole district made returns proportionate to the capabilities of the several properties. As the weather had been so exceedingly dry, and the fields appeared much distressed, after the crop had been taken off, (and which by the way lasted till the 1st of August) my first attention was directed to the cleaning of the fields, which are generally ranker with weeds at that season than at any period of the year. This task I commenced in June, when the heavy picking had ceased, and the labor could be thus spared, and was completed early in August. We were favored with a few soaking showers about the early part of August, and the trees began to revive. So soon as I observed this change I sent in the pruners to commence operations, and succeeded in putting the entire fields in good order by the 1st of October. In the month of September we obtained good blossom, and partial ones in October, which resulted in a crop of 56 tierces in 1841. My neighbour, who was one of the old school, and with whose experience I dared not put myself in competition, pursued an opposite system of management: before a drop of rain had fallen, or a shower of 24 h. was taken out of his fields, he had completed the sowing, and

and his pruning—did then resort to cleaning—

He made but 34 tierces in 1841—although in the same locality with equal advantages. I may also add, in further proof of the efficacy of the system to which I had given the preference, that an overseer in the same district pursued my mode coeval with myself; and that the same results attended his ensuing crop.

My attention was at the time pointedly drawn to this extraordinary difference of opinion between my next door neighbour and myself, and I was the more determined to watch the results. My neighbour argued that he always expected to make a short crop after a heavy one, and it was therefore necessary to sacrifice some wood by pruning early, in order to force the trees to throw out young wood, to produce another large crop in 1842. The seasons however varied, and my neighbour's expectations were doomed to disappointment; for in that year he did not even realize his 1841 crop.

Thus it appears perfectly convincing to me that this sacrifice of which I have heard planters speak as highly justifiable, in order to push for a large crop—is palpably inexpedient and flagrantly injurious. There can be no certain calculations made on the seasons. The trees might be in a state of perfection as to order—the indications equally as conclusive on the mind as to the promise for the next crop, when a sudden blast might destroy all our anticipations, or at any rate render them fruitless. Indeed the very fruit has been seen on the trees, and a heavy winter has often doomed it all to nought.

In arguing this I do not mean to approve of such light prunings, as only to consist in a silly handling of the tree, while a great deal of wood is left behind, which must draw suction, which neither adorns the tree, nor is profitable to man. There must be a medium in all things and that medium is peculiarly required to be observed in pruning. Wood, when once it begins to assume a yellow tinge, gives evident proof of ill-health—it should therefore be taken out, together with all long branches, with a couple of leaves at their ends. It is unnecessary in an essay of this nature to enter too much into minutiae, and enumerate the several appearances of the branches, which it is necessary to cut out, or of the wood, which the pruner is called upon to victimize when he meets with an exuberant tree—but the immutable rule to be observed is to cut out all that experience proves to be useless and unprofitable—taking care at all times to preserve the primary branches, however dejected they may appear, unless they be totally dead and dry.

When age begins to wear upon long established fields, there is a peculiar branch to which they become subject and that is what is termed the “gormandiser” not a bad cognomen certainly, for it sucks voraciously all aliment from the tree. It is of the same species as suckers, with this difference, that the sucker springs in an upright direction from the joints of the tree, whilst the gormandiser shoots out horizontally. Trees suffer much, and soon waste away, when they become addicted to this branch—which arises frequently from careless and ignorant pruning, by cutting away all lateral growth, and

old fields they grow naturally from the stock. It is proper that they should be exterminated, that is taken clear out at the socket, whenever the tree can stand such a course,—but when they have assumed the place of primaries which have been wantonly destroyed, it is impossible to change their order, for so soon as one is cut away, another is sure to resume its place. In that case, it will be as well to allow them to remain and bear, taking them out after every crop.

Pruning is as essential to the cultivation and renovation of the Coffee tree, as medicine is to the restoration of the sick man's health. It has therefore, somewhat surprised me to hear men whom the world have thought experience had made safe in nature's laws, condemn pruning as uncalled for and injurious to the Coffee tree. Fields have been known to bear for a succession of years, after an entire absence of the pruning knife, but it has been as well observed that the trees suffer most materially after that period and will not produce any fruits for another term of years. Mr. Stamp the former proprietor of Mt. Holstein in St. George's, tried this plan—he had an overseer who was a good pruner, and kept the property in good pruning order, but who left in 1830. Mr. Stamp neglected pruning altogether, after he took upon himself the active management—the fields bore heavily for four years after, but subsequently fell off most alarmingly. It had previously averaged its 120 tierces, but fell off to 20.—

The injury sustained from neglect of pruning or perverse obstinacy in decaying the use of

the pruning knife, must ultimately fall seriously on the proprietors of coffee properties, for the outlay requisite to put a neglected field in good order, is equal to three times that which would have sufficed for an ordinary pruning, besides the total loss of two or may be three years' crops. A tree once matted up, and allowed to pass over a winter, is sure to lose a portion of its primary branches, from the want of a circulation of air. As these cannot be replaced, the tree forms a perfect umbrella, and fruit can only be obtained from the top branches, after the tree has undergone a thorough pruning, and almost a re-organisation of wood.

In lowland districts, and more especially in Manchester, St. Elizabeths, and St. Thomas in the Vale, very little pruning is required, and the same is applicable to fields established on light and sandy soils. In these districts, the breaking off the dry wood, and nipping off a few switches constitute the whole art—but in the high mountains, where the trees grow to an exuberance, to cover an area of from thirty to fifty feet, the art of pruning them is replete with science, and forms a most essential feature of their cultivation.

Gentlemen who have been accustomed to the management of properties in those districts, where the trees are small, become entirely bewildered, when they behold the magnificent foliage, which the fields exhibit in the high mountains. In this manner, great errors accrue, and much injury is sustained, by endeavoring to assimilate the extent of pruning requisite in the one district to that of the other. I have also observed that the negroes who had been brought up in

the lowland districts of Port Royal and St. Andrews and who sought employment in the upper part of Saint David's, after the emancipation, were much astonished, and felt themselves at a loss in the use of the knife on the fields to which they had transferred their labor, and they therefore made but indifferent pruners. A severe pruning in St. Thomas in the Vale would be attended with injurious results. Though that parish is exceedingly damp, embedded in fogs, and visited with continual rains, still it is highly remarkable that a moderate St. David's pruning would entirely ruin the field to which the system might be applied. While I was in that parish my attention was directed to an extensive field, which had been entirely ruined, and is now thrown up, by this injudicious course of management.

A question was put to me a few weeks ago by a gentleman who held the attorneyship of an extensive Coffee property highly situated,—he desired to know whether it would not be advisable to allow a field, which was exposed to the north wind, and lately pruned, to remain with its matted young wood till after the spring of next year, in order to protect it from serious injury at that period when the north winds are so prevalent. My answer then just brings me to a consideration of what is termed "*wintering*." I replied that unless the field was well opened, so as to preserve a free circulation of air, and permit the rays of the sun to strike into the heart of the trees, to create some warmth, the field would most assuredly winter, should the weather be severe in the fall of the year; and, in such a case, the pruning would be rendered wholly valueless.

The trees often become so matted towards the heart, from an excess of vegetation after pruning, as to become entirely impervious to the rays of the sun, forming perfect umbrellas, under which a person might seek shelter from a shower of rain. It therefore must be obvious that their state could not resist the consequences which must ensue from the heavy rains that fall usually in October and November. They would rather harbor the wet, and accelerate their own destruction. This event is brought about in a most remarkable manner, the leaves contract and drop off, the branches being previously chilled, and in many cases the latter die off; but should this not ensue, so far as the ensuing crop is concerned, the wood becomes totally unfit for bearing. A new vegetation will come on in the spring; but from the bleakness of the climate, the wood which thus generates will not ripen in time for that crop, but may be available in the ensuing year, if proper care be used that a repetition of the last year's proceedings does not take place.

Having said thus much of pruning, it will be necessary to make a few observations on another portion of cultivation—the weeding. I have given precedence to a consideration of the art of pruning, because I conceive that part of cultivation, of paramount importance. The due cleaning of Coffee fields is equally requisite to their proper culture; but this forms a mere piece of physical labour, requiring neither skill nor ingenuity in its exercise. The African, the Hindostanee, or the European, who perhaps never knew the use of a plantation hoe, soon becomes acquainted with its work, placed along

side of a native laborer. Some care and consideration are however due to this portion of management by the individual who directs its performance. Established fields in dry climates, do not need more than two weedings a year—before and after crop; but in a wet climate, three or four are requisite. In my opinion, the system of scraping away at fields so repeatedly—particularly on hill side lands, has tended much to impoverish them, and wash away the upper soil; and the exposure of the latter to the vertical rays of the sun, immediately after a cleaning, is apt to render the land stiff, and more or less, a portion of its nutritive powers, is thus withdrawn. The weeds, which are taken out by the hoe, form an excellent manure—they should therefore be heaped up beside the tree, to admit of decomposition, and at the next cleaning, the mould thus obtained, carefully applied to the roots of the tree. I knew a property, where it had been customary for years to heap up the weeds in the centre of the roads, till a regular mound was established, and the trees appeared as if planted in trenches. An observing planter, who subsequently succeeded to the management of the property, enquired the cause of this strange appearance on the surface of the land, and on being informed of the circumstances attending it, directed the mould to be dug down, and the roots of the trees well moulded up with the loose earth. This was accordingly done, and a most wonderful result was the consequence. The field soon presented a blooming aspect, in the richness of a luxuriant foliage, and as nature was so far assisted in her workings so was she bountiful in her gifts—the

property made large crops for a series of years in succession.

The manuring of old fields with a view to their renovation, forms an essential portion of their cultivation, and to which little attention was formerly bestowed. As I before observed, when new lands were abundant, the moment a field began to show symptoms of age, it was thrown up, to give place to a new plantation: but, in late years, since the scarcity, indeed, the total want of woodland, has been so severely experienced, it has been deemed expedient to resort to manuring and nursing of the old fields. And since the application of guano has been tried, and its powers as a renovator to the soil made known, planters have expended some care and attention, and applied their skill to the regeneration of old properties. But as the Guano is a very expensive manure (considering its carriage to high properties) and as its properties do not prove to be of so durable a nature, as was anticipated, it has occurred to me that a cheaper and more efficacious manure might be obtained by ordinary means on plantations; such as the penning of stock, and obtaining their excrement, the saving of the Coffee pulp and of the fan trash. A combination of the properties of the three manures, proves a most effectual renovator to a declining soil; a fact which is to be evidenced in the richness and luxuriance of the trees, whenever the Coffee pulp or trash has been washed about their roots by the rains. I have repeatedly tried this manure on old fields under my own superintendance, and applied it after this manner.—Every laborer takes a hoe with him to the field, and

digs a small trench or cavity, above the roots of the trees and then inserts the manure, which is covered by the loose earth. The first heavy shower of rain is sure to wash the manure into the roots of the tree, and the latter derives all its benefits by a suction of the quantity so applied. But if the people be allowed their own way, they are too apt to insert the manure beneath the tree, and thus it is washed away, and its suction drawn to the centre of the row, to generate weeds, without benefiting the object for which it was intended.

On properties where there are Water works, the Coffee pulp is generally carried away, by means of a small wooden gutter, into the cut way, where the water wheel plays; and the fan trash in most instances, is blown away from the fanner into the other cut way where the water wheel which turns the grinding mill, plays. This system, to say the least of it, is a great waste and should be abandoned. The Coffee pulp should be returned to the soil, whose nutritive powers have been called into action to generate it, in the same manner as the cane trash is returned to the soil on estates.

The indications of bearing are usually to be seen in a swelling of the joints, and the hanging down of the leaves, whence the bud issues. The blossom has been kept in this state for weeks, ave months, from dry weather; but the moment a shower of rain falls, with astonishing rapidity, the bud shoots, and in two days after, the field will present one mass of snowy whiteness—the fragrance of which is grateful to the olfactory nerves, and the whole scene imparts pleasure and satisfaction.

Like other fruit trees, the Coffee is acted upon by the seasons, and the late and early blossoms become contingent upon them. In warm districts the March blossom is most calculated on—although expectations for a crop are not given over, till May has passed away. In the colder regions blossoming may commence in March or May, which is considered early; but July and August give strongest and most general blossoms. I have, however, seen large blossoms in September and October, such being the peculiar changes brought about by the seasons. Three good blossoms are usually looked for, but I have known good crops, made of one heavy and regular blossom.

Coffee blossoms shoot out in bunches, not unlike those of the Spanish Jasmine—but they decay in the course of two days, when the fruit is supposed to be set, and formed upon each blossom—the latter either drying, or, in heavy rains, falling off the tree. In cold climates the fields will be seen for months in a continual spitting blossom, and yet no fruit results—as the blossoms are chilled previous to setting; and sometimes the young fruit, after being formed, becomes chilled, turns black, and drops off.

In warm climates the fruit advances rapidly, and in the course of a month will have grown to the size of a small pea; but in cold localities, two months will elapse before it has arrived at that stage. While the fruit is young till the kernel begins to form, it will resist the influence of dry weather; but after that period it droops, and feels much the want of moisture, as if nature, at that particular juncture, required

some assistance, in her efforts to bring the fruit to perfection.

From the time of the blossom to the reaping of the fruit, seven months may be allotted as the probationary term; but I have seen a crop gathered in from a six months' blossom, when the seasons have been favorable; and, in the upper mountains, I have known fruit to be reaped in from an eight months' blossom.

The Coffee begins to ripen in warm districts in August—but in cold places in February, at which period the former crop is finished, whilst in the latter it lasts to August.

ON THE MANUFACTURE OF COFFEE.

The manufacture of this staple commodity, with a view to its improvement in quality, is a subject, which demands our serious attention: and when we observe the vast importance and pecuniary advantage which accrue upon the slightest shade of improvement either in colour or appearance, it becomes the more imperative on us to use all those means which are available, in order to place ourselves on a footing with the foreign grower. It is true that we are unable to enter the contest with the East Indian or slave cultivation, from the abundance and cheapness of labor, which is placed at their command: but by means of our skill and assiduity, we can successfully compete with them by the manufacture of superior produce.

To this portion of plantation management, I have given an attentive enquiry, and shall shortly proceed to state my views on the system best adapted to the curing and preparing for market of good quality produce.

The fruit should be gathered in when in a

blood ripe state, to an appearance like cherries. The laborers are principally accustomed to reap the crop in baskets, of which they carry two to the field; and when the coffee is bearing heavily, and is at its full stage of ripeness, the good pickers will gather in four bushels per diem—and carry the same on their heads to the works.

The fruit is then measured and thrown into a loft above the pulper in a heap. It should be submitted to the first process of machinery—the pulper—within twenty four hours after, if not immediately—but it not unfrequently happens that the manager is unable to pulp his coffee for two and sometimes three days, by which time fermentation ensues, and it becomes impossible after pulping, to wash off the mucilage, which rather adheres to the outer envelope of the berry, and gives the produce what is termed a “red” or “blankety” appearance, when pread out on the Barbacues. The produce is let down, by means of a small hole cut into the floor of the loft, on a floating box, into the hopper of the pulper, and by means of a grater forcing the fruit against the chops, the berries are dislodged from the pulp, and fall upon a sieve, which being shook by the machinery lets the berries fall into the cistern—whilst the grater catches the pulp, and carries it backwards, at each evolution of the roller, around which it is encircled.

The fruit which may have passed through without being more than half squeezed, and having only ejected one berry, is then returned, (after being shaken off by the sieve,) into the hopper, to undergo the process a second time. The pulped Coffee is then permitted to remain

in the cistern for a day and a night, during which period it undergoes a process of fermentation,—it is then washed out in two or three waters, and the whole of the mucilaginous stuff which had risen from the berry by fermentation is entirely washed off, and the Coffee presents a beautiful white appearance. From this the produce is returned out to drain in a barbacue, sloped so as to throw all the water to the centre, where a drain is placed to carry it all off.

It an hour or so after, the Coffee may be removed to the barbagues for curing,—it is there spread out thinly, and exposed to the sun, which, if shining strong, will, in eight or nine hours, absorb all the water, and the Coffee be fit for housing that day. I say fit for housing, because I have repeatedly seen Coffee washed out early in the morning, and put up the same evening. I cannot say I approve of the system, though in fine weather it has been attended with success. From the time the Coffee is first exposed to the sun till the silver skin starts, is the stage, in my opinion, during which the produce suffers most injury. In the first instance, it should be kept constantly turned, in order to get the water absorbed as early as possible; and after it has been housed, the greatest precaution should be taken to prevent its heating; and it is for this I disapprove of early housing, for if wet weather should intervene, and the Coffee cannot be turned out, it is sure to get heated. From this neglect, I have seen a perfect steam rising from the house in the morning when the doors have been opened, and I have known, as a natural consequence, the adhesion of the silver skin to the berry so firmly that it could not be

removed by a sharp pen-knife, without slicing the berry.

In a series of wet weather the produce has remained on the barbaces for several weeks, without the slightest advance in curing; and, unless it be frequently turned, while in this wet state, it is sure to grow,—the berries first swell, then a thin white spire issues from the seam, and on opening the berry, the young leaves will be actually seen formed inside—so rapid is the course of vegetation.

I am of opinion that Coffee should not be housed, till the silver skin begins to start, when no danger can ensue; for if a few wet days should intervene, by turning the Coffee over in the house, and allowing a current of air to pass through it, it will keep four weeks. It is at this stage that the parchment skin begins to show itself; for at first, it adheres to the inner kernel; but the heat of the sun starts it from its hold, and it separates—thus on shaking a handful of the produce, it will be heard to rattle—a sure indication, that the silver skin has risen from the bean, without even threshing it to ascertain the fact. The bean is perfectly white, till the silver skin starts—it then begins gradually to assume the dark, or what is called the half cured appearance. A good day's strong sun will then half cure it, and by subsequent exposure, the produce takes another stage, and gradually loses the half cured, and assumes a blue color—and when the produce is properly cured, and fit for the mill, not the slightest dark spot will be perceptible in the bean, but it will exhibit a tinny blue color.

It is within my observation, that Coffee has

been gathered from the field on the Monday, and prepared for market on the Saturday, in a spell of dry weather: I have known it also to lay on the Barbacues for as many weeks in contrary weather, before it had gone through the same ordeal. With good weather and smooth terraces whereon to cure, nothing but gross and unpardonable carelessness, can produce bad quality of coffee. The difficulty arises in wet weather, when one's skill and assiduity is called into action, to save the produce from being spoiled. After Coffee has been half cured, the putting it up hot at an early period of the day, has the effect of curing it all night. I have noticed produce housed in this manner, and requiring another day's exposure to fit it for the mill.

The Barbacues should be kept in good order—all ruts and holes neatly patched every crop, for to them and other roughnesses is to be attributed the peeling of the berries, their being scratched, and other injuries which the produce sustains. And while on the subject of "Works" I cannot help noticing the extreme carelessness and inattention which, in visiting properties, the works and buildings present to our view. It is utterly impossible to manufacture good produce, unless the machinery and buildings are kept in good order, and the parsimony which is thus displayed in this necessary outlay is fallacious, when one thinks of the result of one or two shillings per 100lbs. lost on a crop through this neglect.

When the crop is perfect, which is generally ascertained by examining out a few berries in one's hands, and finding if it has at-

tained its heavy blue color—it is then fit for milling, which is the second process of machinery which it has to undergo. Here the parchment and silver skins, are dislodged from the berry, by means of the friction of a large roller passing over the produce in a wooden trough, It is then taken out of the trough, and submitted to the fanner, or winnowing machine. when the trash is all blown away and the coffee passing two or three sieves comes away perfectly clean, and partially sized. From this it is again served in order to size it properly, hand-picked, put into bags, and sent on mules' backs to the barquadier. It is then put into tierces, and sold in the Kingston Market, or shipped to Britain.

A variety of circumstances tend to injure the quality of the coffee, which it is beyond human agency to control. Dry weather intervening at the particular period, when the berry is getting full, subjects it to be stunted and shrivelled, and strong dry breezes happening at the same period, will cause an adhesion of the silver skin, which the ordinary process of curing and manufacture will not remove. Late discoveries in the latter, have however, shown the possibility of divesting the produce of that silvery appearance when brought about under the foregoing circumstances. It is almost unnecessary to state that this improvement in manufacture refers to the inventions of Messrs. Myers and Meacock, whose respective merits have already undergone public revision. In reference to Mr. Myer's plan of immersing coffee in warm water I may be allowed to state, that it has come under my own observation, that produce

which had previously been heated through some carelessness in the curing, subsequently was exposed to a slight sprinkling of rain, and when ground out, and fanned, was found to have lost its silvery appearance.

To the invention of Mr. Meacock, a preference has, however, been given, in consequence of the impression that the produce thus immersed in water, will absorb a portion of the liquid, which will deteriorate its quality in its passage across the Atlantic. Several Gentlemen have shipped coffee submitted to this process to England, but I have not learnt the result.

I do not mean, however, in this essay to enter into a disquisition of the merits of the respective claimants to this beneficial invention in manufacture. Suffice is to say, it appears very manifest that a great deal might be done in the way of machinery, to relieve produce of that silvery and foxy appearances, which are so prejudicial to its value in the British market, and which appearances might accrue from a variety of incidents, to which all plantations are more or less subject.

A manifest preference is given in the leading European markets to Coffee which has gone through the pulping and washing process; but strange to say, the consumers of this beverage are totally ignorant of the fact, that the produce which is cured in the pulp, furnishes a stronger decoction, than an equal quantity of the same, which has undergone the other process. Many persons are of opinion, that the mucilaginous substance which is washed off in pulping, is absorbed by the bean, when cured in the pulp,

and which gives strength to the produce, and enhances its aromatic flavour. On most properties, it had been customary, to cure the remnants of the crop in this way, for the use of the plantation; and it has been well noticed by great epicures in the flavor of the decoction, that the Coffee thus cured, produced the strongest and best beverage.

With regard to the use of Coffee as a beverage, it has had its admirers and detractors. In the East, it has been the subject of many a ridiculous controversy. The Turks believe that the infusion of Coffee was invented by the Angel Gabriel, to restore the health of their Prophet, Mahomet. In Europe, it has been pronounced by some as injurious to health, whilst others talk of its virtues with enthusiasm; but the extended use of this beverage in Europe during the last ten years is of itself sufficient testimony of its salutary qualities, and must negative the assertions of its detractors. On chemical analysis, it has been found to contain an acid or gummy substance, a resinous and astringent extract, a considerable proportion of oil, and some ammonia and other salts. The action of fire destroys its crude and watery taste, and renders the oil empyreumatic. When prepared for the table, it has established for itself, the character of aiding digestion, and has a marked effect on the nervous system, in removing languor and drowsiness, and in favoring a pleasant cheerfulness, friendly to sociality, wit, and good humour. The Turks, on going to battle, or on any emergency, employ opium to excite their spirits, and to steady their courage,—to relieve the languor con-

sequent thereon, Coffee is the specific which they employ.

The Orientals prepare their infusion very thick, and drink it very warm, without milk or sugar, merely flavored with some aromatic or perfume. The Persians used to prepare an infusion from the dried berry, without removing the pulp. The Turks again preserve the pulp after it has been separated from the seed, and having dried it, procure from it an agreeable beverage, resembling tea. They also use an infusion of the seed, without being roasted—or they roast it, but preserve the berry entire in the infusion

The most common mode now generally adopted for preparing Coffee for the table, is to roast the berries in an open iron vessel, over an equal slow fire, and kept constantly turned during the process. It ought to be withdrawn from the fire, so soon as the smell informs us that the Coffee has begun to burn, and when it has acquired a color not unlike that of tobacco. It ought then to be cooled as rapidly as possible, by exposing it freely to the air in some cool vessel. When perfectly cold, it is to be placed in the mill, and ground to a fine power—which, infused in boiling water, in the proportion of half an ounce to two ounces of water, produces a most delightful and agreeable beverage.

APPENDIX.

[In re-printing Marah's useful Essay we have determined to add to its value by appending a few articles of more or less interest in connection with the Coffee Trade of Ceylon; and which, in a collected form, will be useful for reference.

EDITORS COLOMBO OBSERVER.]

(From the Colombo Observer, March 19, 1849.)

CHICORY.

To a Mercantile Friend we are indebted for permission to copy a document of the highest interest to our Planting friends and indeed to every one connected with Ceylon. There is no escape from the position taken by the Memorialists:—that so long as the Customs duty on Coffee is retained, an equivalent excise ought to be levied on its competitor.

“London, 1st January, 1849.

With reference to the present anomalous position of Coffee, as exhibited in the annexed account, we beg to give the substance of a Memorial now before the Lords of the Treasury and the Board of Trade, tracing it to the footing on which Chicory is at present placed, and suggesting the remedies, that without any further delay, ought to be applied.

“In Sugar, according to the annexed Table, a fall in price since 1844, of 26 per cent. has been attended by an increase in the consumption of 46 per cent. In Coffee on the contrary, with a reduction in the price since 1846, of 15 to 22 per cent. on duty paid descriptions, the consumption has not only *not* increased at a corresponding rate, but has for the last three years come to a complete stand still, being last year only 38.85 million lbs., that is to say no more than in 1846, and $\frac{5}{8}$ of a million lbs. less than in 1847. The revenue derived from Coffee has in consequence also fallen off from £756,838 in 1846, to about £710,069 in 1848. During these three years, there has, with prices almost stationary, been some increase in the consumption of Cocoa and Tea. In the former it has progressed from 2.96 million lbs. in 1846, to 3.96 million lbs. last year. In Tea, as the increase in the consumption which last year exhibits is more apparent than real, it will be fairer to take the average of the last two years, which is 47.42 million lbs. or about $1\frac{1}{2}$ per cent. more than in 1846. It will be seen that, although, even with stationary prices, there has been some increase in the consumption of these kindred articles, it is not by any means of such a character as in the slightest degree to account for the falling off in Coffee.”

“To what then is owing the change

that appears recently to have overtaken an article which, ever since 1784, has, more than any other, furnished our political economists with striking instances in proof of the now generally received doctrine, that every well considered reduction in the Import duties, will, by the increase in the consumption which follows it, eventually compensate the revenue for any temporary sacrifice it may have submitted to in this process?"

“The cause of that change is sufficiently notorious, and the history of it is this:— In Germany the root of the *Chicorium Intybus*, L. or Succory, a species of Endive, indigenous also to our island, has for the last forty years been prepared and sold on a large scale as a cheap substitute for Coffee. From Germany it was, thus prepared, subsequently also introduced into this country; but as a duty was levied upon it equal to that which Coffee paid, and as by 3 Geo. IV. cap. 53, the sale of any roasted vegetable substance in imitation of Coffee was, under a penalty of £50., restricted to persons *not* being dealers in Coffee; the interest of our grocers was not then enlisted in pushing it into any extensive use. The import duty on Foreign Chicory led, however, in time, to the cultivation of that root here, and when in this way a supply of it, *free of any duty*, had grown up, means were found in August, 1840, to procure a Treasury order

authorizing the Excise, for the future not to object to grocers selling Chicory, or mixing it with Coffee. The effect of this abrogation of the 3 Geo. IV., cap. 53, was speedily felt, and induced the importers of Coffee in 1842 to complain of it to the Chancellor of the Exchequer. These representations however, unfortunately, had not the desired result, and the consequence is, that under the operation of the active demand on the part of the dealers, the produce of Native, *duty free*, Chicory, which Mr. McCulloch in 1842 estimated at 6.72 million lbs., has since at least doubled, and is to that extent now encroaching on the consumption of Coffee."

"And this is only what might have been expected, for while home-grown kiln-dried Chicory can be delivered at $2\frac{1}{4}$ per lb. to the wholesale dealers, the average price of duty-paid Coffee is from 7d. to $9\frac{1}{2}$ d. per lb. Accordingly, even respectable grocers add at least 2-oz. of Chicory to 14 of Coffee, while others make the mixture half and half. The most experienced officers of the Excise estimate the average proportion of Chicory in what is sold in the London shops for Coffee, at *one third*; in the manufacturing towns in the country it is said to be *fully one half*. What further portion of pure Chicory is elsewhere added to the mixture, it is impossible to say; but it is fact, that those descriptions of Coffee which will bear the greatest admixture of Chicory, such as Costa Rica and Java, enjoy, on that account, a marked pre-

ference in the market, greatly to the detriment of the more delicately flavored Ceylon Coffee."

"The interests of the public, of the colonists, and of the revenue, therefore alike require that the above cited Act of 1822, 3 Geo. IV. cap. 53, which has never been formally repealed, should again be put in full force. It is true that this interference with Chicory has been vaguely deprecated, on the plea that it is a "native product," but so is the leaf of the sloe, and so would Tobacco be, if the cultivation of that plant here had not been put a stop to. In these cases, the legislature has seen fit to decree proscriptions against "native products," and there is, therefore, nothing repugnant to the principle on which our legislation has hitherto proceeded in such matters in letting the 3 Geo. IV. cap. 53, take its course—that course, be it observed, involving *no proscription* of the Chicory, but merely a *regulation of its sale*.—Another plea in favor of Chicory has been drawn from its alledged wholesomeness, which has been much aduerzed in Germany. The truth is that it is simply diuretic, and the habitual use of it must be taken in proportion to its power of action. This refers to *genuine* Chicory, but what is sold to the retailer as such is a *mixture*, against the wholesomeness of which the very strongest presumption is justifiable, and the most respectable wholesale houses have felt this so strongly, as to induce them to take into their own hands the manufacture of the Chicory which they sell, purchasing themselves the root and kiln-drying it on their own premises.

“Estimating the proportion in which Chicory at present enters into what is sold as Coffee, at the low rate of one third, it follows that, along with the 36·85 millions lbs. of Coffee consumed last year, 12·28 millions lbs. of Chicory have been sold. If the sale of Chicory should again, in conformity with 3 Geo. IV. cap. 53, be restricted to persons, *not* being vendors of Coffee, and taking out an annual license for that purpose, the consumers would again be left to make their own mixture of these two ingredients. In that case, it is believed, that they would at most, mix only half as much Chicory with their coffee as the grocers at present do. The effect would be, that about six millions lbs. less of Chicory, but the same quantity more of Coffee would be consumed; consequently, that our Coffee growers would find a vent for six millions lbs. more of their produce here, and that an additional annual revenue of at least £10,000 would flow into the Exchequer, the current of which has for the present been diverted into other channels.”

“That being the case it is difficult to discover on what grounds it can possibly any longer be declined, to give renewed effect to the 3 Geo. IV., cap. 53, the suspension of which has already operated so very mischievously.”

“But though this would go some way towards setting matters right, it would not by any means meet the case *fully*. So far as the public and the revenue are concerned, the question may be one of mere expediency; but as regards the Colonists, it is essential one of principle. Justice towards them obviously de-

mands, that these our fellow subjects should be placed on the same footing as the cultivators of Chicory at home, and that, therefore, the Excise should levy the same duty on home-grown Chicory, as the Customs do on British Plantation Coffee, while Foreign Chicory ought to pay the same duty as Foreign Coffee. This is so clearly the case,—is so necessary a consequence of our whole present system of colonial and commercial policy, and would at the same time, be attended by fiscal results so acceptable, that it is needless to do more than merely enounce the proposition, in order to obtain a general assent to it. In the case of Sugar, Parliament has, in fact, ever since 1837, recognized and acted on the principle of it. By the 1 Vic. cap. 57, the same duty was imposed on home-made Sugar from Beet-root, as on British Plantation Sugar from the Cane, and by 3 and 4 Vic. cap. 57, the application of the former act was extended to home-made Sugar from any substance whatever. That fact must be regarded as settling the question, for no one will argue that our Coffee planters are not entitled to the same measure of justice as our Sugar planters, and granting *this* is to grant all that is here contended for.

—“The present duty on Foreign raw or kiln-dried Chicory is 20s. per Cwt., and on roasted or ground ditto, 6d. per lb., and the clearances for consumption of it in London amounted in 1847 to $\frac{2}{3}$ of a million lbs., and last year to $\frac{3}{4}$ of a million lbs. yielding a very insignificant revenue.—The gross excise duty collected on home-made Sugar at the rate of 24s. per Cwt. up to April, 1845, and 14s. subsequently, averaged

1838 to 1840, £61., and 1841 to 1846, £4,540. a year, but fell in 1847 to £169.—An Excise duty equal to 4d. per lb. on home-grown *roasted Chicory*, would either produce not far from £200,000, annually, or, if it checked the consumption of Chicory, the blank would be filled up either by British Plantation Coffee, paying 4d. or, by Foreign Coffee paying 6d. per lb. Custom's duty. In either way the revenue would be benefited to a very considerable amount."

JAMES COOK & Co.
40, *Mincing Lane.*

(*From the Colombo Observer March 29*)

EXPORT OF COFFEE.

Memorandum of Coffee exported from Ceylon from the year 1836 to 1848, inclusive.

Year.	Quantity.
1836	cwt. 60,329
1837	„ 43,164
1838	„ 49,541
1839	„ 41,863
1840	„ 63,162
1841	„ 80,584
1842	„ 119,805
1843	„ 94,847
1844	„ 133,957
1845	„ 178,603
1846	„ 173,892
1847	„ 293,220
1848	„ 279,715

(*From the Colombo Observer March 22,*) 

COFFEE AND CHICORY.

OUR readers will be interested by the following elaborate statement of the Import, Price, and Consumption of Coffee, framed by Messrs James Cook & Co. the London Brokers, and printed, with similar Tables on Tea, Sugar and Cocoa, in the Circular into Great Britain—it has gone on steadily from 41½ Millions of lbs. in 1842, to nearly 60 Millions in 1848. It is in the consumption of Coffee in Britain that the startling fact of a dead stand, and even a falling off, is visible. Chicory is evidently made at home on this subject. But the Meeting of the Chamber, like all its Meetings, was a secret one, and the Public are left in the dark as to the action taken or recommended. As it is important to bring together all the information on the subject that is available, we reprint below the article on Chicory in the latest Edition of Macculloch's Dictionary.—A local concern that it would be a great hardship to deprive people of a mixture which long use has led them to like; and of which the worst that can now be said is, that it is a Diuretic. If people choose to take large quantities of Diuretics, we do not well see how the law can step in to aid outraged Nature, while the Millions are allowed nay encouraged, to poison themselves with the vilest Alcoholic compounds. But it is just as clear that our Legislators at Home have no business, while they retain the enormous Customs duty, to place the Coffee Trade at the mercy of a competition which they will not permit in the case of Tea, Tobacco or Sugar. The Coffee Traders, while they pay a Customs duty of 4d to 6d per lb., can demand, on the principles of the legislation in force, that an equal excise should be levied on Chicory. But the lovers of Chicory justice, (principles to which Statesmen of late have begun to yield,) and say:—"It is monstrous to talk of grubbing up Chicory fields—clean against common sense and the spirit of the age; but it is quite right that Coffee should be at once relieved from the heavy Customs impost. Let it, by all means, as a great article of the People's food come in free, or at a trifling duty. The loss of Revenue must be made up by retrenchment." "To this complexion" the matter "may come at last"; and it seems to us that, for such a contingency, all who agitate the subject should be prepared. At the same time, we go fully with those who insist that they who profess to sell pure Coffee, should be punished if their professions are false—that if the mixture of Chicory or any other substance with Coffee is legalized, the retailers should be bound properly and fully to describe the article they sell; thus: "Pure Ceylon Coffee for those who like it @ 1s 2d per lb."—"Ceylon Coffee mixed with ¼ of good Chicory 10d per lb." Such a course would be fair and above board. The principle is fully carried out in the article of Bread. The law does not say "You shall sell your 4 lb. loaf at a certain price; but if you profess to sell a loaf containing 4lb. of good wheaten flour, we shall punish you for light weight or the mixture of inferior or deleterious substances."

COFFEE, (United Kingdom.)

Price, Consumption, Import, and Revenue, for the Years 1842 to 1848, inclusive.

		1842.		1843.		1844.	1845.	1846.	1847.	1848.	
		to 9th July, 6 ³ / ₁₀ d.	from 9th July, 4 ³ / ₅ d.								
Customs Duty	British Possessions ₤ lb	6 ³ / ₁₀ d.		4 ³ / ₅ d.		4 ³ / ₅ d.	4 ³ / ₅ d.	4 ³ / ₅ d.	4 ³ / ₅ d.	4 ³ / ₅ d.	
	Foreign ₤ lb	Imported from B. P. in E. I., not produce thereof.	9 ²⁰ / ₁₀₀								
		Imported from Foreign E. I.	3 ⁵ / ₁₀	8 ² / ₅ d.	8 ² / ₅ d.	6 ¹ / ₁₀ d.	6 ¹ / ₁₀ d.	6 ¹ / ₁₀ d.	6 ¹ / ₁₀ d.	6 ¹ / ₁₀ d.	6 ¹ / ₁₀ d.
	Other Foreign	1 ⁶ / ₁₀									
Average price of Ceylon.. in Bond		7 ¹ / ₂ d. 10d.		5 ¹ / ₂ d. 8 ¹ / ₂ d.		6d. 8 ¹ / ₄ d.	5 ¹ / ₂ d. 7 ¹ / ₄ d.	5d. 7 ¹ / ₄ d.	4d. 6 ¹ / ₂ d.	3d. 5 ¹ / ₂ d.	
Average price of Ceylon.. Duty Paid		1s. 2d. 1s. 4d.		9 ¹ / ₂ d. 1s. 1 ¹ / ₂ d.		10d. 1s. ¼d.	9 ¹ / ₂ d. 11 ¹ / ₄ d.	9d. 11 ¹ / ₄ d.	8d. 10 ³ / ₄ d.	7d. 9 ¹ / ₂ d.	
Consumption	British Possessions..... lbs.	17.30		20.13		19.53	20.79	23.76	27.03	29.38	
	Foreign..... "	11.22		9.85		11.82	13.50	13.	10.44	7.47	
Total		28.52		29.98		31.35	34.29	36.76	37.47	36.85	
Revenue		£ 768,886		£ 697,376		£ 681,616	£ 717,871	£ 756,838	£ 747,105	£ 710,063	
Import	British Possessions..... lbs.	20.48		18.28		24.11	23.23	24.28	34.24	34.80	
	Foreign..... "	20.96		20.66		22.41	27.14	27.53	21.15	25.13	
Total..... lbs.		41.44		38.94		46.52	50.37	51.81	55.39	59.93	

(From Macculloch's Dictionary of Commerce.)

CHICORY OR SUCCORY, the wild endive, or *Cichorium Intybus* of Linnæus. This plant is found growing wild on calcareous soils in England, and in most countries of Europe. In its natural state the stem rises from 1 to 3 feet high, but when cultivated it shoots to the height of 5 or 6 feet. The root, which runs deep into the ground, is white, fleshy, and yields a milky juice. In Germany, and in some parts of the Netherlands and France, chicory has long been extensively cultivated for the sake of its root, which is used as a substitute for coffee. When prepared on a large scale, the roots are partially dried, and sold to the manufacturers of the article, who wash them, cut them in pieces, kiln-dry them, and grind them between fluted rollers into a powder which is packed up in papers containing from 2 oz. to 3 or 4 lbs. The powder has a striking resemblance to dark ground coffee, and a strong odour of liquorice. It is largely used in Prussia, Brunswick, and other parts of Germany; but as it wants the essential oil and the rich aromatic flavour of coffee, it has little in common with the latter, except its colour, and has nothing to recommend it except its cheapness.

Chicory was formerly raised to some extent in England as an herbage plant, its excellence in this respect having been much insisted upon by the late Arthur Young. Latterly, however, chicory has been largely substituted for coffee here, as well as on the Continent: and as foreign chicory, when imported, pays a duty of 6d. per lb., while that raised at home pays no duty, its cultivation has been rapidly extended. It has, in fact, been affirmed, by those best acquainted with the subject, that in 1842 the growth of British chicory was little, if at all, short of 3,000 tons! We need not, therefore, be surprised, considering the influence of this large and rapidly increasing supply of untaxed chicory over the consumption of coffee and the revenue derived from it, that this subject has engaged a good deal of attention. We do not, however, think that it presents any real difficulty. If a duty is to be laid on coffee, the interests of the consumer and of the revenue alike require that an equal duty should be laid on all articles used either as substitutes for coffee, or (which is the usual method of employing chicory) as means of adulterating the latter. We are well convinced that the substitution of chicory for coffee has already occasioned a loss to the revenue of 100,000l. a year, besides its mischievous influence in adulterating and debasing a popular beverage. There cannot, therefore, as it appears to us, be a doubt that, if the culture of chicory be permitted, it should be subjected to the same duty as coffee. Inasmuch, however, as the collection of the duty would be difficult, and much fraud and evasion would doubtless be practised, the better plan would be to follow the precedent set in the case of tobacco, by grubbing up the chicory plantations, and making, at the same time, compensation to their owners. A measure of this sort would do justice to all parties, and would afford that protection to the interests of the consumer and of the revenue which is indispensable:

General Instructions

1. The first part of the report should be a general statement of the purpose of the study.

2. The second part should describe the methods used in the study.

3. The third part should present the results of the study.

4. The fourth part should discuss the implications of the study.

5. The fifth part should conclude the report.

6. The sixth part should list the references used in the study.

7. The seventh part should list the appendices used in the study.

8. The eighth part should list the tables used in the study.

9. The ninth part should list the figures used in the study.

10. The tenth part should list the footnotes used in the study.

11. The eleventh part should list the glossary used in the study.

12. The twelfth part should list the index used in the study.

13. The thirteenth part should list the bibliography used in the study.

14. The fourteenth part should list the appendixes used in the study.

15. The fifteenth part should list the tables used in the study.

16. The sixteenth part should list the figures used in the study.

17. The seventeenth part should list the footnotes used in the study.

18. The eighteenth part should list the glossary used in the study.

19. The nineteenth part should list the index used in the study.

20. The twentieth part should list the bibliography used in the study.

21. The twenty-first part should list the appendixes used in the study.

22. The twenty-second part should list the tables used in the study.

23. The twenty-third part should list the figures used in the study.

24. The twenty-fourth part should list the footnotes used in the study.

25. The twenty-fifth part should list the glossary used in the study.

26. The twenty-sixth part should list the index used in the study.

27. The twenty-seventh part should list the bibliography used in the study.

28. The twenty-eighth part should list the appendixes used in the study.

29. The twenty-ninth part should list the tables used in the study.

30. The thirtieth part should list the figures used in the study.

(EXTRACTS FROM THE ARTICLE "COFFEE"
 IN MACCULLOCH'S DICTIONARY :
 EDITION OF 1847.)

COFFEE (Ger. *Koffee*, *Koffebohnen*; Du. *Kaffy*, *Koffiboonen*; Da. *Kaffe*, *Kaffeböner*; Sw. *Koffe*; Fr. It. and Port. *Café*; Sp. *Café*; Rus. *Kofé*; Pol. *Kawa*; Lat. *Coffea*, *Caffea*; Arab, *Bun*; Malay, *Kā-wa*; Pers. *Tochem*, *Kéwéh*; Turk *Chaube*), the berries of the coffee plant (*Coffea Arabica* Lin.) They are generally of an oval form, smaller than a horse-bean, and of a tough, close, and hard texture; they are prominent on the one side and flattened on the other, having a deeply marked furrow running lengthwise along the flattened side; they are moderately heavy, of a greenish colour, and a somewhat bitterish taste.

Progressive Consumption of Coffee in Great Britain. Influence of the Duties.—In 1660, a duty of 4d a gallon was laid on all coffee made and sold. Previously to 1732, the duty on coffee amounted to 2s a pound; but an act was then passed in compliance with the solicitations of the West India planters, reducing the duty to 1s 6d a pound; at which it stood for many years, producing, at an average about £10,000 a year. In consequence, however, of the prevalence of smuggling, caused by the too great magnitude of the duty, the revenue declined, in 1783, to £2,869 10s

10½d. And it having been found impossible otherwise to check the practice of clandestine importation, the duty was reduced, in 1784, to 6l. The consequences of this wise and salutary measure were most beneficial. Instead of being reduced, the revenue was immediately raised to near *three* times its previous amount, or to £7,200 15s 9d, showing that the consumption of legally imported coffee must have increased in about *a ninefold proportion!*—a striking and conclusive proof, as Mr. Bryan Edwards has observed, of the effect of heavy taxation in defeating its own object,—(*Hist. of the West Indies*, vol. ii. p. 340. 8vo. ed.)

The history of the coffee trade abounds with similar and even more striking examples of the superior productiveness of low duties. In 1807, the duty was 1s 9d a pound; and the quantity entered for home consumption amounted to 1,170,164 lbs., yielding a revenue of 161,245l. 11s. 4d. In 1808, the duty was reduced from 1s. 8d. to 7d.; and in 1809, no fewer than 9,251,847 lbs. were entered for home consumption; yielding, notwithstanding the reduction of duty, a revenue of 245,856l. 8s. 4d. The duty having been raised, in 1819, from 7d. to 1s. a pound, the quantity entered for home consumption, in 1824, was 7,993,041 lbs., yielding a revenue of 407,544l. 4s. 3l. In 1824, however, the duty being again reduced from 1s. to 6d., the quantity entered

for home consumption, in 1825, was 10,766,112 lbs., and in 1831 it had increased to 22,740,627 lbs., yielding a nett revenue of 583,751£.

The rapid increase in the consumption from 1825 to 1832 must not, however, be wholly ascribed to the reduction of the duty. This, no doubt, had the greatest influence; but a good deal is also owing to the low price of coffee from 1824 to 1830; and also to the great reduction during the same period in the price of low brown sugar (fully 1½d. per pound), a cheap and abundant supply of which is so indispensable to the extensive use of coffee.

These statements, which are principally deduced from the accompanying account, No. II. includes the United Kingdom, and is brought down to 1844. The most remarkable features in this account are the reduction of the duty on coffee from the East Indies and Ceylon to the same level as that on coffee from the West Indies, and the farther reduction of the duty on coffee from British possessions in 1842 to 4½d. per lb. The equalisation of the duty on East and West India coffee had become indispensable after the rapid decline in the supplies from the West Indies consequent to the emancipation of the slaves; for, as foreign coffee is burdened with a high discriminating duty, the price of British coffee must otherwise have risen to such a height as materially to interfere with the

consumption. The latter, indeed, has not increased since 1832, in the ratio which might have been expected from the increasing wealth and population of the country, and, in fact, rather declined during the years 1840, 1841, and 1842. This result was no doubt in part to be ascribed to the then comparatively depressed situation of the manufacturing classes; but we believe that it was mainly owing to the admixture of chiccory, and other matters, with coffee. We have already seen (art. CHICCORY) the extent to which chiccory is produced free of duty in this country, and the rapid increase of its culture; and as it is wholly used as a substitute for coffee, or rather as a means for its adulteration, we need not be surprised at the stationary consumption of the latter, even with low prices and a reduced duty. It is, indeed, indispensable, if we would do justice to the coffee planters, and protect the revenue, either to lay the same duty on chiccory that is laid on coffee, or if that be impracticable, to grub up the chiccory plantations, on making compensation to their owners. But exclusive of chiccory, it is affirmed, and we believe truly, that other and more objectionable substances have latterly been extensively employed in the adulteration of coffee. Something, perhaps, may be done to obviate such frauds by increased vigilance on the

part of the police and the revenue officers; but the only effectual remedy is to buy coffee before it is ground; and as a mill for grinding may be bought for a small sum, and coffee is sold ready "roasted," there is, in this way, no great difficulty in obviating adulteration. Those who use ground coffee will also be secure against fraud if they resort only to shops of the highest character.

We observed in the former edition of this work, that "sound policy would seem to suggest that the duty on foreign coffee should be materially reduced; for though it be absolutely less now than formerly, it amounts to 8 2/5d. per pound, being double that on coffee from a British possession. But its reduction to about 6d. per pound, at the same time that it would allow Brazil and other foreign coffee to be freely entered for consumption in the event of the supply of British colonial coffee becoming deficient, rising in price, would leave a protection of no less than 50 per cent. in favour of the latter; which surely is as much as can be conceded with any due regard to the interests of the consumer." And we are glad to have to state that, in 1844, the duty on foreign coffee was reduced to 6 1/10d. per lb.

The introduction of tea and coffee, it has been well remarked, "has led to the most wonderful change that ever took place in the diet of modern civilised nations,

—a change highly important both in a moral and physical point of view. These beverages have the admirable advantage of affording stimulus without producing intoxication, or any of its evil consequences. Lovers of tea or coffee are, in fact, rarely drinkers; and hence the use of these beverages has benefited both manners and morals”—(*Scotsman*, 17th of October, 1827) So early as 1710, the famous Latin poet Vanierius described the preparation and eulogised the virtues of coffee.

—————“illo medicamine vates
 Ingenium emendet, lætusque intacta resumet
 Catmina; nec fontus alios, quibus ora poetæ
 Proluerint, fluxisse solo male credet Achivo.”

Lib xi. p. 272. ed. 1774.

Supply and Consumption of Coffee.—Owing to the increasing consumption of Coffee in this country, the Continent, and America, the great value of the article, the large amount of capital and labour employed in its production, and the shipping required for its transport, it has become a commodity of primary commercial importance. It deserves particular attention, too, inasmuch as there are few, if any, articles that exhibit such variations, not only as to consumption, but also as to growth and price. These are occasioned partly by changes of commercial regulations and duties, and partly, also, by the

plant requiring 4 or 5 years before it comes to bear; so that the supply is neither suddenly increased when the demand increases, nor diminished when it falls off. St. Domingo used formerly to be one of the greatest sources of supply, having exported, in 1786, about 35,000 tons; and it is supposed that, but for the negro insurrection which broke out in 1792, the exports of that year would have amounted to 42,000 tons. The devastation occasioned by this event caused, for a series of years, an almost total cessation of supplies. They have again, however, increased, and are understood to amount, at present, to about 15,000 tons a year. From Cuba, the exports of coffee have, for some years, owing partly to an increased consumption in the island, and partly to the efforts of the planters having been more directed to the cultivation of sugar, been comparatively stationary. They may at present amount to about 22,000 tons, or, including Porto Rico, to 25,000 tons. In Java and Brazil, the culture of coffee has increased with unprecedented rapidity (see *BATAVIA* and *RIO JANEIRO*); so much so, that the exports from Java, which did not, a few years ago, exceed 18,000 tons, now amount to at least 65,000; while those from Brazil, which have increased in an equal degree, amount to about 80,000 tons. The growth of coffee in India and Ceylon has been very greatly increased, especially in

the latter, where, within the last few years, the plantations have been so much extended, that it is believed their produce will very shortly equal the present consumption of the U. Kingdom. There has, no doubt, been a serious decrease in the exports of coffee from the British West Indies; the imports into the U. Kingdom having declined from 11,014 tons in 1832 to 4,147 do. 1844; but when reference is made to the whole supply, this diminution is but inconsiderable.

Exports.	Tons.
Mocha, Hodeiha, and other Arabian ports.....	8,000
Java.....	65,000
Sumatra, and other parts of Foreign India	8,000
Brazil and the Spanish Main.	80,000
Hayti	15,000
Cuba and Porto Rico	25,000
British West India colonies..	4,000
India and Ceylon	13,000
Dutch West Indies	5,000
French West Indies and the Isle de Bourbon.....	8,000
	231,000

Consumption.	Tons.
Great Britain.....	13,500
Netherlands and Holland ...	40,500
Germany, Russia, and coun- tries round the Baltic	50,000
France, Spain, Italy, Tur- key in Europe, the Le- vant, &c	50,000

The United States	45,000
Canada, Australia, &c.....	8,000
	—————207,000

Of the entire export of coffee from Arabia, not more, perhaps, than 4,000 or 5,000 tons finds its way to the places mentioned above; so that, supposing these estimates to be about correct, it follows that the supply of coffee at present exceeds the demand by about 24,000 tons a-year. The latter, however, is rapidly increasing; and it is not easy to say whether it be destined to outrun, keep pace with, or fall short of the supply. On the whole, however, we should be inclined to think, that though they may occasionally vary to the extent of a few thousand tons on the one side or the other, the probability is that the supply and demand will be pretty nearly balanced; so that, supposing peace to be preserved, we do not anticipate any very great variation of price. When prices are considerably depressed, consumption is stimulated, and production checked, and conversely when prices are high. Oscillations will, no doubt, continue to take place in future, as they have done hitherto; but unless the cost of producing coffee should be seriously affected, which probably is not very likely, (unless some violent measures should be adopted with respect to the slaves in Brazil,) they will not be more than temporary.

The consumption of coffee in the Uni-

ted States has increased with great rapidity since 1821, in which year it amounted to only 5,306 tons. Part of this increase is, no doubt, to be ascribed to the reduction of the duty, first from 5 to 2 cents per pound, and its subsequent repeal; part to the fall in the price of coffee; and a part, perhaps, to the increase of temperance societies. Probably also, it was in some degree ascribable to the comparatively high duties formerly laid on the teas imported into the United States; these, however, finally ceased in 1833.

Coffee is sold in bond: the business being done in the public market either by private or public sales. It is always sold at landing weights and revenue tares; the latter being on casks, barrels, and boxes identical with the real tares, and an average rate on bales and bags. Draft is allowed for as follows; viz. on packages weighing under 1 cwt., 1 lb., 1 cwt. and under 3 cwt. 2 lbs.; 3 cwt. and under 5 cwt., 4 lbs.; and 5 cwt. and upwards 5 lb. Coffee is sold at a prompt of 1 month, allowing a discount of $2\frac{1}{2}$ per cent. or 1 per cent. Thus the coffees of St. Domingo, Havannah, and Brazil, (with the exception of the "plantation" variety of the last two), are sold at a discount of $2\frac{1}{2}$ per cent., whereas all coffee of British plantations, or that liable to the low duty, including also the coffees of Laguayra, Costa Rica, "Plantation" Rio & Havannah,

Mocha, Java, and other East India varieties, are sold at a discount of 1 per cent.

The following *Pro formâ* account of the sale of coffee from Ceylon may be taken as representing coffee sold at a discount of 1 per cent., and that of the sale of Rio coffee as representing coffee sold at a discount of 2½ per cent.; but, of course, the freight and insurance would vary according to the port it came from. These sales are made out as if the goods were sold within one month from arrival. There is no charge for rent, as the consolidated rate covers that charge for 12 weeks. Coffee is always rent-free to the purchaser to the prompt day, and lies at the seller's risk till then, unless paid for.

Species of Coffee. Roasting, &c.—The coffees of Jamaica, Ceylon, and Mocha are generally esteemed the best; then follow the coffees of Costa Rica, Dominica, Berbice, Demerara, Bourbon, Java, Martinique and Hayti. Arabian or Mocha coffee is produced in a very dry climate, the best being raised upon mountainous slopes and sandy soils. The most fertile soils are not suitable for the growth of very fine coffee. Mr. Bryan Edwards observes, that "a rich deep soil, frequently ameliorated by showers will produce a luxuriant tree and a great crop; but the beans, which are large, and of a dingy green, prove, for many years, rank and vapid." And the same remark is made by Mr. Crawford, with

respect to the coffee of Java.—(*East Indian Archipelago*, vol. i. p. 497.) Coffee is improved by being kept; it then becomes of a paler colour.

Mocha, or as it is commonly called, Turkey coffee, should be chosen of a greenish light olive hue, fresh and new, free from any mustiness, the berries of a middling size, clean, plump, and without any intermixture of sticks or other impurities. Particular care should be taken that it be not false packed. Good West India coffee should be of a greenish colour, fresh, free from any unpleasant smell, the berries small and unbroken.

Coffee berries readily imbibe, exhalations from other bodies, and thereby acquire an adventitious and disagreeable flavour. Sugar placed near coffee will, in a short time, so impregnate the berries, and injure their flavour, as to lower its value 10 or 20 per cent. Dr. Moseley mentions, that a few bags of pepper, on board a ship from India, spoiled a whole cargo of coffee.

“The roasting of the berry to a proper degree requires great nicety: the virtue and agreeableness of the drink depend upon it; and both are often injured by the ordinary method. Bernier says, when he was at Cairo, where coffee is so much used, he was assured by the best judges, that there were only two people in that great city who understood how to prepare it in perfection. If it be under-done, its

virtues will not be imparted, and, in use, it will load and oppress the stomach, if it be over-done, it will yield a flat, burnt, and bitter taste, its virtues will be destroyed, and, in use, it will heat the body, and act as an astringent.”—(*Moseley*, p. 39.)

Regulations with respect to Sale, Importation, &c.—Roasted beans and rye, reduced to powder, have frequently been used to adulterate ground coffee: and the possession of such substitutes for coffee was formerly an offence punishable by the forfeiture of the articles, and a penalty of 100*l.* But by the act 3 Geo. 4. c. 53., persons who are *not dealers in coffee* may take a license for roasting and selling corn, peas, beans, or parsneps, labelling the parcels with the names, and conforming to the various regulations prescribed in the act.

Dealers in coffee must take out a license, renewable annually, which, at present, costs 1*l.*

No coffee can be imported in packages of less than 100 lbs. *nett* weight.

No abatement of duties is made on account of any damage coffee may have received.

Coffee cannot be entered as being the produce of any British possession in America or of the Mauritius, until the master of the ship in which the coffee is imported deliver to the collector or comptroller a certificate of its origin, and declare that the coffee is the produce of such place.—(8 & 9 *Vict.* cap. 86, § 38.)

PRO FORMA SALES of 500 Bags Ceylon Coffee per "Persia" and sold by Order and for
 Account of D. A. M. & Co.

	£	s.	d.	£	s.	d.
1845. Dec. 3.						
By R. L. for 500 bags.						
Lots 1 to 25., 500 bags, weighing	625	0	0			
tare 4 lbs.		26	3			
draft 2 lbs.			4			
	598	0	24			
			nett.....at 65s.			
			Discount 1 per cent.			
			£ s. d			
Charges						
Warehousing entry.....				1924	3	11
Sea insurance 1700l. at 45s per cent.....				19	8	9
Policy at 3s 6s per cent., 2£ 19s 6d. Commiss on ½ per cent., 8£ 10s 0d.....				0	4	6
						1924 15 2
Insurance against fire for 2 mon hs on 2000l. at 2 per cent.....	49	14	6			
Dock rates on 607 cwt. 0 qrs. 16 lbs. at 1s 2d per cwt.....	2	0	0			
Lotting 1d per bag.....						
Freight 607 cwt. 0 qrs. 16 lbs. at 4£ 10s per ton of 18 cwt.....	37	9	10			
Interest on dock rates, 31 days.....	151	15	8			
Public sale expenses, stamps, &c.....	0	3	2			
Brokerage and guarantee 1 per cent.....	2	10	0			
Commission 2½ per cent.....	19	8	0			
	48	19	0			
				311	19	5
Nett proceeds.						
Cash, 3d January, 1846.....				612	16	9
Errors excepted.						
London, 3d of January, 1846.						

ON THE INORGANIC CONSTITUENTS OF THE BERRIES
OF THE COFFEE PLANT (COFFEA ARABICA.)

By Thornton J. Herapath, Esq.

Having been desirous, some short time since, of determining the best manure for the West Indian coffee plantations it became necessary for me, in the first place, to ascertain the composition of the inorganic constituents of the coffee berry. For this purpose 150 grs. of very fine West Indian coffee berries, which had been dried in a gas stove at a temperature of about 220. F., were taken, and carbonized at a gentle heat in a loosely-covered platinum crucible, recommended by Prof. Rose. The carbonaceous mass thus obtained was then repeatedly digested with boiling water, until a drop of the solution, when evaporated to dryness on a glass plate over a spirit-lamp, left only the slightest perceptible trace of residue; it was then dried and heated to redness in a large flat-bottomed platina dish, over an Argand burner, until all the carbon was consumed and a pure white ash remained behind. The ash thus obtained was very carefully transferred to a porcelain crucible containing a small lump of neutral carbonate of ammonia, and it was then subjected to a gentle heat, the top of the crucible having been previously imperfectly closed with a piece of platina foil. The soluble salts having been extracted from the ash by means of hot water, the solution was added to that from the charred mass, and the whole evaporated to dryness; the weight of the residue which comprised the entire soluble salts was 2.01 grs.

The salts insoluble in water, having been dried and heated to dull redness, were found to weigh

2.94 grs. ; which, when added to the weight of the ash. *

The process of analysis pursued in this investigation was similar to the one described by me in a paper "On the composition and distribution of the inorganic substances in the different organs and component organic parts of the mulberrytree," recently communicated to the Chemical Society.

The soluble salts were found to contain—

Phosphoric acid	0.904
Sulphuric acid	0.011
Potash	0.755
Soda	0.326
Chlorine	0.018
	—————
	2.014
—excess of oxygen in soda	0.004
	————— 2.010

The insoluble salts contained—

Carbonic acid	0.381
Sulphuric acid	0.047
Phosphoric acid	0.960
Lime	1.260
Magnesia	0.272
Silicic acid	0.020
	—————
	2.940
	—————
	4.950

* Some error which we have not the means of rectifying. It stands so in the *Ceylon Times*, from which Paper we have reprinted the article.

From these analyses it follows that the percentage of ash is 3.3, and that 100 grs. of the ash contain of—

Phosphoric acid	18.273
Sulphuric acid	0.224
Potash	15.238
Soda	6.264
Chloride of sodium	0.606
Carbonate of lime	3.838
Carbonate of magnesia	11.515
Sulphate of lime	1.616
Phosphate of lime (tribasic)..	42.022
Silicic acid	0.404
	<hr/>
	100.000

Deducting the carbonic acid, we obtain the following per centage composition:—

Phosphoric acid	19.801
Sulphuric acid	0.244
Potash	16.512
Soda	6.787
Chloride of sodium	0.645
Lime	2.329
Magnesia	5.942
Sulphate of lime	1.751
Phosphate of lime	45.551
Silicic acid	0.438
	<hr/>
	100.000

And, consequently, for every ton of dried coffee berries that is raised on a plantation, the proprietor must consider about the following quantities of the various mineral substances as having been removed from his land :—

	lbs.	oz.
Phosphoric acid	27	14½
Sulphuric acid	0	13½
Potash	11	4
Soda	4	10
Chloride of sodium, or com- mon salt	0	7
Lime	18	14
Magnesia	4	1
Silicic acid, or silica	0	5
	68	5

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