doors in the bottom supported by chains. The carriage is run over a hopper containing sliding doors so that either of the four bins may be filled.—*Indian Engineer*, Aug. 25.

THE AMSTERDAM BARK SALES.

The Cinchona-bark sales to be held in Amsterdam on August 30th will consist of 355 cases and 4,451 bales (about 423 tons) divided as follows:—From Government plantations, 67 cases and 231 bales (about 28 tons); from private plantations 288 cases and 4,220 bales (about 395 tons.) This quantity contains of druggists' bark: Succirubra quills 11 bales 296 cases; succirubra broken quills and chips 150 bales 59 cases; succirubra root 5 bales. Of manufacturing bark: Ledgeriana broken quills and chips 3,102 bales; Ledgeriana root 809 bales; officinalis broken quills and chips 10 bales; hybrids broken quills and chips 350 bales; hybrids root 14 bales.—*Chemist and Druggist.*

COFFEE CULTIVATION IN THE BLUE MOUNTAINS: JAMAICA.

I reached Cedar Hurst shortly after noon and accompanied by Mr. Francis, I visited his Coffee Plantation. Fortunately the gathering of the crop was in full progress at the time and I had an opportunity of carefully observing this operation. The crop is gathered by men, women and children, who deposit the ripe berries in bags or baskets when picked. One very noticeable feature is the skilful way in which the negroes carry the baskets, &c. on their heads. This is of great advantage on such occasions as the present because instead of being obliged to use one hand to move the basket both are available for picking the fruit. At the end of the day all the coffee is brought into the receiving-house, where it is measured and the pickers paid in proportion to the quantity they have gathered. If labourers are plentiful 1/ per tub is the price usually paid. Sometimes a woman will pick as much as a tub and a quarter in the day, but this is exceptional. Extreme watchfulness is necessary on the part of those who supervise the picking gangs, as there is a tendency to fill up with green berries. When however, this is detected, the defaulter is severely reprimanded and a deduction is made from his or her earnings. A tub of newly picked coffee should produce half a tub of parchment coffee or about 20 pounds of marketable coffee. Before leaving this part of the subject I might mention that whilst going round this estate I had a clear illustration of the imprudence of allowing the tree to grow to a greater height than say six, or at the most seven feet. The trees in many instances have not been topped, but have been permitted to grow as high as eight or ten feet. In order to reach the berries the pickers are obliged to pull down the branches, and the consequence is that the topmost ones are frequently broken and the tree itself very much injured. On the whole the trees on the Cedar Hurst Estate were bearing heavily and appeared to be in a healthy and flourishing condition. Some estates in the Blue Mountains of Jamaica produce as much as 100 tierces of coffee annually. A tierce is equal to 800 lb. so that the total produce is 80,000 lb. and the coffee realises from 115/ to 120/ or 130/ per cwt.—*Report of Mr. Crowther, Curator, Botanic Station, Gold Coast Colony.*

MIGHTY TREES.

For the past fifteen years the Naval Dockyards have been partly supplied with a timber brought from the Antipodes. Thus under beneficent Free Trade the Britain of the South sends its substitute for oak to the Britain of the North, sixteen thousand miles away. It is largely used for spars and yards; and as masts for the largest war ships has been found superior to all others. The tree yielding a wood so favourably known to trade and naval experts is the kauri (Duammara Australis). Confined to a very restricted area; it flourishes only in the northern part of New Zealand—chiefly in that narrow peninsula tapering off to a bold headland—and is the undisputed sovereign of the Australasian forest. No other tree can approach it in grandeur of proportion or in impressiveness, when, as one of a class, it holds its own over stretches of country hundreds of miles in extent. Unlike the pines of the Old World, it has no needles, but masses of small pinnate leaves of an olive-green colour, and in the early spring tiny white blossoms. In the autumn the branches are loaded with apple-shaped cones. When towering singly or in a group above the mixed bush it repels the undergrowth and wanton parasites on every side, the limits of its sway being marked by a bare, round patch of brown earth. As a rule, however, it grows in forests sacred to its own species. In Auckland Province there is, or was, a wood extending over hill and dale, mountain and gully, for fully 500 miles, and further south there are others of hardly less area. The trees stand close together, not branching out until near the top. The diameter at base measures from 30ft. to 60ft., attaining a height of from 100ft. to 130ft. before it shows a single bough. The boles of quite young trees are often 20ft. in girth, and 100ft. in height, while some patriarchs soar up straight as a larch to close on 200 ft. Above this magnificent pedestal spread the leafy crowns, interlacing with one another until daylight can only enter in a dim subdued fashion, as if afraid of intruding. When compared with the titanic dimensions of the stick, however, the boughs appear small and insignificant, and never display the graceful curves and noble dome of an English oak or elm. A kauri grove once seen can never be forgotten. To walk between its mighty pillars, smooth and dark as ebony uniform in age and height, and buried in a perennial twilight and a silence, that the wildest storms only disturb by the merest ripple of sound, awakens a feeling of awe. Mile upon mile they stretch into distance in a majestic procession, which follows every irregularity in the land. The monotony and stillness are absolute. Sounds of animal life are never heard. The contented droning of insects, and glad singing of birds, are as vigorously excluded as the sunshine. The kauri reigns supreme in its own domain. Nor is the luxurious under-growth of the bush tolerated—no palms or tree ferns, no shrubs or orchids, none of the beautiful parasites which make the mixed woods so enchanting; nothing but a living carpet of delicate maiden-hair. But to bring home to the mind the stupendous size of the kauri it must be compared with the largest trees in these islands. In England there are several elms 70 ft. high and 30 ft. in girth; oaks 80 ft. high and 40 ft. in girth; and in Scotland there is an ash 90 ft. high and 19 ft. in girth. But these are regarded as extraordinary, and grow in solitary grandeur. The average girth of a tree in Britain is not more than 12 ft., or the average height above 60 ft. But in New Zealand there are miles of kauris whose average height is not less than 100 ft. and whose girth is not less than 30 ft.

A tree somewhat similar to it in appearance, but not so valuable in a commercial sense, is found in the Fiji Islands, a fact ascertained by Captain Cook in his several visits to the South Seas. He then pronounced the kauri pine superior to Norway pine, a judgment which has since been abundantly verified. Not only is it a source of wealth to the Colony—the value of the export trade averaging 176,732*l.* a year—but it is used

within the country itself as oak was once used in England. Except in the heart of the large towns, where brick and mortar are compulsory, the private houses and public buildings are built of it exclusively, and so is ordinary furniture, such as tables, chairs, and the like. This faith in the durability of the wood is more than justified. So solid and iron is its heart that the weather boards torn from huts rudely put together by the pioneers of fifty years ago, and lately demolished to make room for the improvements of progress, have been found in a perfect state of preservation, and are now exhibited as a curiosity. Kauri pillars sunk in the earth, or in fresh water, seem alike impervious to damp or the attacks of insect life. These merits having become known to the contractors who pave London streets, quite recently small blocks of the flexible, close-grained pine of the Antipodes were laid down in one of our great thoroughfares. If used before it is sufficiently dry, however, kauri timber is apt to shrink endways. Nor does the value of one of the royallest trees in the world end with its death. When it has exhausted the properties of the soil necessary to its existence, large stretches are left rich in the gum which dropped from its mighty arms and trunk. After the lapse of time it solidifies into a brown or sherry-coloured substance not unlike amber, from which the finest varnishes are made. So important has the trade in this article of commerce become that it far exceeds in value the export of kauri timber. At intervals in the forests, too, the bushman comes across a tree whose trunk, instead of being smooth and dark as an ebony column, is rough and knotty. It yields the most ornamental of all New Zealand woods, and is described as mottled kauri, to distinguish it from the ordinary kind. Creamy rather than white in colour, and beautifully marked in rich designs of a deep, warm brown, it takes on a very high polish, and is so much prised for artistic and decorative purposes that the fortunate possessor can clear a profit of from 500*l.* to 600*l.* without any difficulty. One of the colonels of the 73rd Regiment, of Maori war fame, bought an estate near the once-renowned Gate Pah, and discovered in it a mottled kauri, with the timber of which he was able to line the whole of his house, and to have made a duchesse dressing-table, coffee-table, eight chairs, a wash-stand, a work-table and a bedstead. The profit on an ordinary kauri tree, whose height is 50ft. and whose girth at base is 20ft., averages 100*l.*

This huge tree, whose trunk is more like a factory chimney than anything else, which is unequalled for size in the whole realm of nature, upon which, when laid low, a party of eight can dance a quadrille with ease and upon which a small house can be built, is sometimes the victim of an enemy before which it is as powerless as the veriest sapling. This is the rata, a parasite with a bright red blossom. In the woods, where it reigns supreme, perhaps as in the human would for mutual protection, its beautiful enemy dare not intrude. It is only when it stands alone among the mixed bush that it falls a prey. Against the coy advances of the ropes of verdure that swing so alluringly from the boughs of a neigbouring tree it is as vulnerable as one under the spell of a witching woman. But not until they twine themselves in serpent-like windings round the trunk is the doom of the monarch of the woods a certainty. Month after month and year after year the murderous embrace grows tighter until the rata proudly flaunts its scarlet flowers from the crown. Then the end comes. An equinoctial gale sweeps through the forest, and with fierce delight assails the kauri, which has defied it for a thousand years. Sapped of its strength, it rocks to and fro and shivers in agony. Then it falls to the earth, dragging down with it the beautiful parasite which has been its ruin. Sometimes the rata grows downwards from a fork of a woodland giant, when, rooting itself firmly in the ground, it shoots upwards, clasping the trunk in its arms. After the final decay of the support by which it has raised itself to the light, it develops into one of the most beautiful of New Zealand forest trees.—London *Standard*, Aug. 11.

LIME CULTIVATION IN THE WEST INDIES.

There is an interesting note on the West Indian lime in a recent number of the *Kew Bulletin*. The sour lime-tree (*Citrus medica*, L. var. *acida* Brandis) which yields the lime-juice and essential oil of lime familiar in the drug-trade was probably introduced into the West Indian islands from the East. Lime-juice is obtained by compressing the fresh ripe fruits between heavy rollers. It is exported in the raw state or concentrated. The concentrated variety is obtained by evaporating the raw juice in copper or enamelled-iron pans until it is reduced to about one-eighth or one-tenth of the original bulk. When exported it is a dark, viscid fluid of the consistence of treacle. From the rind of the fresh fruits there is obtained by the ecuelling hand-process a fine essence of limes exported in copper vessels. The process which is a slow one, is performed by women and girls. The task per day is measured in fluid ounces. By distilling the raw lime-juice a spirit is obtained known as oil of limes. The essential oil of limes extracted by hand is far more valuable than the oil of limes, as the perfume of the latter is injuriously affected by the heat necessary in distillation.

Lime-trees were abundant in Dominica as long ago as 1791, but at that period they appear to have been grown only for their fruit. The lime-juice industry appears to have been started in Dominica by the late Dr. Imray, but shortly after the commencement of that gentleman's venture the Messrs. Sturge of Birmingham, quite independently of Dr. Imray, and without any knowledge of his experiments set to work to establish similar plantations in the neighbouring island of Montserrat. The industry appears to hold out prospects of being a remunerative one, for, according to a Dominica planter it takes about 1000*l.* to purchase about twenty acres of land and plant them with lime trees, to build a house for the manager, to erect a mill with copper boilers to concentrate the juice, to pay for superintendence, and cover all expenses for seven years. At the end of this time the estate would yield forty hogsheads of concentrated lime-juice a year, worth 480*l.* The yearly cost of cultivation and manufacture would amount to 240*l.*, the rest being gross profit.—*Chemist and Druggist.*

CHEMICALS AS INSECTICIDES.

According to Professor Long, the agricultural station of the Pas de Calais has just published some particulars with regard to the materials used for the destruction of insects, from which it appears that insecticides are often used which really have no destructive power over insects of various kinds. He says some of these products, manifestly efficacious, not only destroy insects but the cultivated plants upon which they thrive; others he says, are extremely dear; while again, others, deadly to an insect of one order, have no effect upon those of another. Some insects, he remarks, have a resisting force which is really prodigious in face of the means of destruction which are commonly opposed to them. He gives an instance in which the larvæ of a destructive insect were plunged in pure sulphide of carbon, but after an immersion of five minutes the little creatures, having been again exposed to the air, acquired their first vigor. M. Huet has made some experiments u