

Notice of the copalchi-bark : a new and valuable bitter analogous to the cascarilla / by James Stark.

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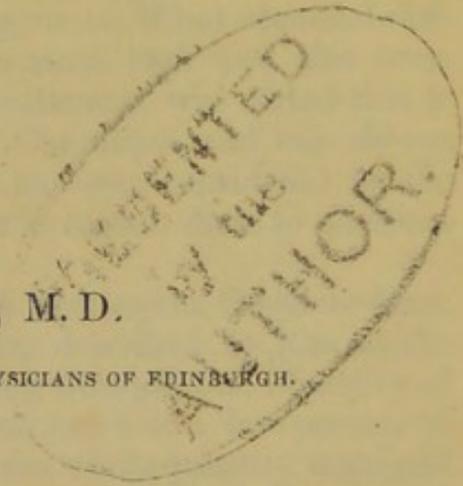
COPALCHI-BARK;

A NEW AND VALUABLE BITTER ANALOGOUS
TO THE CASCARILLA.

BY

JAMES STARK, M. D.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.



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NOTICE

OPAL CHALK

A NEW AND VALUABLE BITTER ANTI-BILIOUS

TO THE LIVER

PREPARED BY JAMES SPARK, M.D.

PRINTED BY J. B. BROWN

NOTICE, &c.

IN the course of some inquiries into the remedies used in Chili and Peru, I received from one of my correspondents in Chili, a bitter bark under the name of *Natri*, which was stated to be much employed by the medical practitioners and natives of Chili in the treatment of intermittent and other fevers, and held in higher repute than even Peruvian bark itself. The bark and leaves sent enabled me to ascertain that the *Natri* was the produce of a species of *Croton*, but, from the want of the flowers and fruit, the particular species could not be ascertained.

In the course of a correspondence with my friend John Eliot Howard, Esq., Tottenham, he mentioned to me that a quantity of bark had been received by the Messrs Gibbs of London, from San Blas, which appeared to be analogous to, if not identical with the *Natri*. A small quantity of the same bark had also been brought over from Santa Cruz by a gentleman, who stated that it was there known under the name of Chiquique, and was *always* given to the Indians in fever cases, and was considered by the medical practitioners there as superior in certain cases to cinchona bark itself.

Mr Howard at once recognized this bark as the Copalchi Bark of Goebel, a valuable Mexican bitter, described by him as the product of the *Croton suberosum*; and through the liberality of the Messrs Gibbs, that gentleman sent me first a few pounds to make trial of it in practice, and then the whole quantity imported into this country.

Though it has not been in my power to lay my hands on Goebel's description, I have satisfied myself as to this bark being that known in Europe since 1825, and described under the names of Copalchi Bark and Quina blanca,—the product of one tree, variously termed *Croton suberosum* by Humboldt and Bonpland, Kunth, &c., *Croton pseudo-china* by Schlechtendal and Nees Von Esenbeck, and *Croton Cascarilla* by Professor Don.

The description of the bark given in the *Dictionnaire Universelle de Matière Medicale*, accurately corresponds with the specimens in my possession, as does also that given in the *Dict. des Drogues Simples et Composées*. In these articles it is described as a new and valuable bitter used in Mexico, similar in properties to *Cascarilla*, and believed to be the produce of the *Croton suberosum* of Humboldt.

It is to Schiede and to Nees Von Esenbeck, however, that we are chiefly indebted for ascertaining the exact species of plant which yields the Copalchi bark, and showing by their descriptions and figures, that the tree which they describe as yielding it is that formerly called by Humboldt the *Croton suberosum*. Schiede, as well as Nees Von Esenbeck, found this Copalchi—(which is the Indian name)—sold in the apothecaries' and druggists' shops at Jalapa, and over the province of Mexico, under the name of *Quina blanca*, and considered by them there as the finest and best sort of Cascarilla. Indeed, Schiede was so convinced that he had discovered the true source of the best cascarilla, that from the examination of the tree which produces this quina blanca, he asserted that the best cascarilla was the produce of the *Croton pseudo-china* of Schlechtendal—now called by Professor Don, the *Croton cascarilla*.

Nees Von Esenbeck only went the length of considering the Copalchi as closely resembling the cascarilla, and gave, in the supplement to his splendid work the "*Plantæ Medicinales*," most beautiful coloured figures of the copalké-croton in all its states, flowers, fruit, leaves, and bark, rendering it perfectly impossible ever hereafter to mistake the bark or plant which he describes. He also terms the tree the *Croton pseudo-china*.

Copalchi bark was subjected to a minute analysis by Mercadieu in 1825, who found it to contain no crystallizable alkaloid, but the following principles: 1. An astringent matter, of a deep brown colour. 2. An excessively bitter principle (containing also an astringent principle), soluble in water. It is in this bitter principle that the febrifuge properties reside which the physicians at Vera Cruz have recognized it to possess. 3. A green fatty substance. 4. A clear brown resin, insipid and inodorous. 5. A brown animalized colouring matter, insoluble in ether and absolute alcohol, but soluble in dilute alcohol and in water. 6. Starch. 7. Woody fibre. 8. Phosphate and oxalate of lime. The burnt ashes yielded hydrochlorate and sulphate of potass, oxides of iron and of manganese, carbonate and phosphate of lime, with traces of magnesia and silica.

Brandes, who analyzed this bark the year following, could not detect any crystallizable alkaloid, but recognized the bitter principle on which its active properties depended—a resin, concrete fatty oil, &c.

This bark is now undergoing a minute analysis by Dr Douglas Maclagan and Dr Anderson. Meanwhile, my friend, Mr Howard, has made some trials to prepare the bitter principle in a pure state. The bark was exhausted by almost absolute alcohol; this tincture evaporated to dryness; the bitter principle removed from this extract by cold water, which left a residuum of

waxy matter, and, on evaporating this aqueous solution to dryness, the bitter principle was obtained in dark brown, almost black, lustrous, but non-crystalline scales, of an intensely bitter taste. The bitter principle thus procured possesses the strange property of being deliquescent, requiring it to be kept in closely stoppered phials.

Copalchi bark yields an agreeable aromatic bitter to water, but especially to proof spirit. The tincture and spirituous extract, indeed, are agreeably aromatic, and on first tasting, leave on the tongue and palate a sweetish taste.

Since I received the first samples of Copalchi bark, I have made trial of it in a few cases, which seemed tolerably well fitted for testing its properties,—if it possessed any.

The first case was one of atony of the stomach and bowels, with weak and imperfect digestion, and irregular action of the bowels, at one time costiveness, at another slight diarrhœa, existing. In this case, the usual bitters, as gentian, quassia, and Colombo disagreed, exciting nausea, &c., while Peruvian bark and quinine increased the headach, and induced a feverish state of the system. The case, however, wonderfully improved under the use of the simple infusion of the Copalchi, of the strength of half an ounce of bark to the pint of boiling water, given in table-spoonful doses three times daily.

In the second case in which trial was made of Copalchi bark, the patient suffered from irregularity of the bowels, but with this peculiarity (several instances of which came under my notice during the past winter during the prevalence of cholera), that twice daily, viz., at three o'clock afternoon and three o'clock morning, more or less violent spasmodic cramp in the bowels came on, preceded by shiverings and coldness, and terminating by a sweating stage. Quinine in $1\frac{1}{2}$ grain doses twice daily, had been given for two days, with the effect of completely checking these intermittent paroxysms, when it was obliged to be stopped, in consequence of its inducing violent headaches, flushing of face, and feverishness. The paroxysms immediately returned as before, but, on substituting infusion of Copalchi, giving a wine-glassful at two o'clock afternoon, and the same quantity at bed-time, the paroxysms were arrested, and have not since returned.

Like relief followed in another but milder case of the same nature. In this case, the cure was trusted entirely to the Copalchi, no other medicine being given, in order to see whether it really possessed any antiperiodic powers. It is therefore scarcely possible to doubt that it possesses some antiperiodic virtue, so that we can easily believe what is stated of its powers by the Mexican and Peruvian physicians in arresting the paroxysms of intermittent fevers.

It has been used in several other cases, but without the results being so striking as to render its superiority to other bitters unquestioned. I am at present giving it in a case of epilepsy, in which all other bitters had disagreed, excepting that much neglected but valuable bitter, the trefoil (*Menyanthes trifoliata*), and the case, so far as it has gone, has proceeded satisfactorily under the use of the Copalchi bark. Dr Bennett informs me that he is administering it to an epileptic case in the Royal Infirmary, apparently with marked benefit.

When I received the first few pounds of Copalchi bark, I sent some to the Royal Infirmary, and to the two principal Dispensaries, in order to let this bitter get a fair trial. I have not yet received reports from these institutions, but learn that in every case in which this bitter has been administered, it has given satisfaction, proving an agreeable light bitter. Being now in possession of the whole importation of this bark, through the liberality of the Messrs Gibbs, and being anxious that its powers should be fairly and thoroughly tested by the medical men of Edinburgh, parcels of it have been sent to the Royal Infirmary, to the New Town and Royal Dispensaries, and to the Leith Dispensary; and the remainder lies with the Messrs Duncan & Co., druggists, at whose shops in Edinburgh and Leith, small quantities of the bark may be obtained gratuitously, by those who wish to prepare it for themselves. The Messrs Duncan & Co. will also keep the infusion, decoction, tincture, and spirituous extract ready for prescription, charging merely for the trouble and cost of materials used in the preparation, as the bark itself is *not to be sold* at present. Should the bark be found to prove a valuable addition to our stock of bitters, it could soon be procured from Mexico and Peru, in any desired quantity; meanwhile, I would invite the profession in Edinburgh to make trial of it, and shall feel much obliged if they will make the results of their trials known to me.

It appears to me, that one of the great wants in the medical practice of the present day is, a good light bitter of some real therapeutic powers. Most of the bitters in common use are harsh, disagreeable, and heavy, often exciting nausea, aggravating rather than allaying the irritability of a stomach already too irritable. To avoid these it has become of late too much the practice to employ quinine, bebeerine, strychnine, or other concentrated bitters or alkaloids, which in many cases do more harm than good. Satisfied I am of this, that in dyspeptic cases especially, by employing the alkaloids or bitter principle, separated from the aromatic, resinous, or other principles with which they are usually associated, we destroy to a great extent the therapeutic powers of the drug, and fail to derive those benefits which we should receive from making use of a spirituous extract, a tinc-

ture, or even the simple infusion or decoction of the drug. The warm aromatic principles, associated with the powerful bitter in the Copalchi, seems to me to supply the want of a light bitter, which most practitioners must have experienced; and it is to be hoped, that it will succeed in the hands of others as much as it has as yet done in mine.

It may be remarked, that the infusion and decoction of Copalchi are best made of the strength of half an ounce of bark to one pint of water. The tincture, with one ounce of bark to one pint of proof spirit. The dose of the infusion and decoction is a tablespoonful or small wineglassful twice or thrice daily. Of the tincture, one or two teaspoonfuls, or of the extract from one to two grains, twice or thrice daily.

As Copalchi bark yields freely much colouring matter, might it not be employed with advantage in dyeing? One, at least, of the crotons yields a valuable dye; and even the cascarilla itself is used in France as a dyestuff, yielding a rich black colour, which is easily fixed on stuffs little fitted for receiving fine dyes.

The first part of the paper is devoted to a description of the apparatus used in the experiments. The apparatus consists of a glass vessel containing a liquid, in which a small amount of a solid substance is suspended. The vessel is placed on a scale, and the weight of the liquid is measured. The solid substance is then added, and the weight of the mixture is measured again. The difference between the two weights is the weight of the solid substance. This method is used to determine the density of the solid substance.

The second part of the paper describes the results of the experiments. It is found that the weight of the solid substance is proportional to the volume of the liquid displaced. This is in accordance with the law of buoyancy. The density of the solid substance is found to be constant, and is equal to the ratio of the weight of the solid substance to the volume of the liquid displaced.

The third part of the paper discusses the theory of buoyancy. It is shown that the buoyant force acting on a body immersed in a liquid is equal to the weight of the liquid displaced. This is the principle of Archimedes. The theory is applied to the case of a solid substance immersed in a liquid, and it is shown that the buoyant force is equal to the weight of the liquid displaced.

The fourth part of the paper discusses the application of the theory of buoyancy to the determination of the density of a solid substance. It is shown that the density of a solid substance can be determined by measuring the weight of the solid substance and the weight of the liquid displaced. This method is used in the experiments described in the paper.

The fifth part of the paper discusses the accuracy of the method. It is shown that the method is accurate to within a few per cent. This is due to the fact that the weight of the liquid displaced is measured with a scale, and the weight of the solid substance is measured with a balance. The accuracy of the method can be improved by using a more accurate scale and balance.

The sixth part of the paper discusses the limitations of the method. It is shown that the method is only applicable to solid substances that are denser than the liquid in which they are immersed. It is also shown that the method is only applicable to substances that do not dissolve in the liquid.

The seventh part of the paper discusses the conclusions of the experiments. It is concluded that the density of a solid substance can be determined by measuring the weight of the solid substance and the weight of the liquid displaced. This method is simple and accurate, and can be used to determine the density of a wide variety of solid substances.