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A  
DESCRIPTION  
OF THE  
GENUS CINCHONA.

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A  
DESCRIPTION  
OF THE  
GENUS CINCHONA,

COMPREHENDING  
THE VARIOUS SPECIES OF VEGETABLES FROM WHICH  
THE PERUVIAN AND OTHER BARKS OF A  
SIMILAR QUALITY ARE TAKEN.

ILLUSTRATED BY  
FIGURES OF ALL THE SPECIES HITHERTO DISCOVERED.

TO WHICH IS PREFIXED  
PROFESSOR VAHL'S DISSERTATION ON THIS GENUS,  
READ BEFORE THE SOCIETY OF NATURAL HISTORY AT COPENHAGEN.

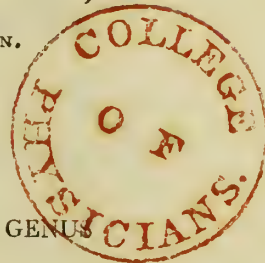
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ALSO  
A DESCRIPTION, ACCOMPANIED BY FIGURES, OF A NEW GENUS  
NAMED  
HYÆNANCHE: OR, HYÆNA POISON.

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L O N D O N :  
PRINTED FOR B. AND J. WHITE, AT HORACE'S HEAD, FLEET-STREET.

M.DCC.XCVII.





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PREFATORY ADVERTISEMENT.

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THE several species of the genus *Cinchona*, from which the Peruvian and other Barks of a similar quality are taken, have been hitherto but little known to the Botanists of Europe; and even the principal species, the *Cinchona Officinalis*, so long established in the practice of Physic as one of the happiest of modern discoveries, was but obscurely known till about the year 1738, when Monf. Condamine elucidated its History,

and gave its Botanical Characters with the necessary degree of precision.

Since that period so greatly has the science of Botany been enriched by the discoveries of Naturalists, that no less than twelve species of Cinchona are now found to exist. Of these, some of the principal have been excellently described by Professor Vahl of Copenhagen, of whose Dissertation on the subject we here give a translation; with the addition of other species since discovered; accompanied by figures taken from the specimens themselves, preserved in the Herbarium of Sir Joseph Banks, and assisted by drawings in his possession.

By this means persons residing in those parts of the world in which any species of the genus  
nus

nus may occur, will be enabled to ascertain, whether what they have discovered be new, or already described; and thus the most interesting additions may probably be made to the medical treasures we at present possess in this highly important genus.

IN the course of printing this work, some few inaccuracies have escaped the Author's observation :—it is necessary to remark the following :

Page 13. l. 3, from bottom, for a *Mr. Wright*, read *Dr. Wright*. From this gentleman, who is lately returned to the West Indies, many more valuable discoveries in Botany may be expected.

Page 30. l. 5, from bottom, for 46 read 56.

Page 38. l. 15, for *Beavais* read *Beauvois*.

In page 39. l. 19. after the word *lions*, add the following note :  
“ Meaning the *Puma*, sometimes called the American lion—a very different species from the common lion.”

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PROFESSOR VAHL'S  
DISSERTATION  
ON THE  
GENUS CINCHONA.

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TO THE  
LINNÆAN SOCIETY OF LONDON,

AND TO

SIR JOSEPH BANKS, BART.

*KNIGHT OF THE MOST HONOURABLE ORDER OF THE BATH,*

AND

*PRESIDENT OF THE ROYAL SOCIETY,*

BY WHOSE LIBERAL AND FRIENDLY COMMUNICATIONS,

ACCOMPANIED BY

ORIGINAL DRAWINGS AND SPECIMENS FROM HIS HERBARIUM,

THIS WORK HAS BEEN SO AMPLY ENRICHED,

IT IS NOW INSCRIBED, WITH THE GREATEST RESPECT,

BY

AYLMER BOURKE LAMBERT,

*FELLOW OF THE ROYAL AND ANTIQUARIAN SOCIETIES, ETC.*

*VICE-PRESIDENT OF THE LINNÆAN SOCIETY.*

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TO THE  
LINNÆAN SOCIETY OF LONDON.

SIR JOSEPH BANKS BART.

SECRETARY TO THE SOCIETY.

IN ANSWER TO THE

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OF THE SOCIETY.

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OF THE SOCIETY.

THE want of an exact knowledge from what plant this or that particular medicine is taken, is not one of the least causes of the present imperfection of the History of Physic; and notwithstanding the extensiveness of commerce in these latter times, and the opportunities thereby afforded to the cultivators of Natural History of examining the productions of various countries in their native soil, and even in regions from whence self-interest had before excluded them, we are still ignorant from whence several medicines are prepared, which we every day use in the practice of Physic. To this ignorance must likewise be attributed that uncertainty which prevails in the operations of particular medicines, and the different opinions which have prevailed relative to their effects on the human body; and this relates not only to such vegetables as are brought from distant regions, but even to those which are natives of our own country. From the hotter climates we receive several medicines, which, though coming from different places, are called by the same title; and many European plants are in one place commended for their singular efficacy,

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while

while in another they are found to be quite ineffectual ; which difference has been owing to having gathered roots, leaves, &c. of a very different plant from the real one so highly esteemed in some particular spot. This error is the easier to commit, as it often happens that the names of plants growing in the northern parts of Europe are often given to several of those of the south, though the plants themselves are very different, not having been properly collated. As a proof of this I will adduce only two instances : The Radix Buglossi in Italy is taken from a very different plant from our own (which is the *Anchusa officinalis*), a plant which I have found in but few places of the south of Europe, and which is in general rare. On the contrary, the species mentioned by Professor Retzius in the first fasciculus of his Observations, p. 12, under the name of *Anchusa Italica*, is there full as common as the *A. officinalis* with us, and is accordingly there made use of ; and though it differs very much from ours, yet it is considered by most of the botanists of the south of Europe as the same plant with the above northern one, which they have never seen, and of course know not how to distinguish. In the garden of an hospital at Genoa, the *Symphytum tuberosum* was cultivated for the use of the apothecaries instead of the officinale, which is the true *Consolida major* of the *Materia Medica*.

I pass over many similar examples of different plants being considered as the same in different places, even  
 though



though much more dissimilar than the abovementioned. But if such mistakes are committed by those from whom a solid and exact knowledge of the proper distinctions of plants might be expected, what may we not apprehend to be the case, when the gathering of them is committed to the care of persons still less able to distinguish such productions? Their knowledge of plants consists in accidental distinctions, and is often confined to their being accustomed to find them in some particular place or other; a circumstance which is often capable of giving two different plants a similar aspect. As this happens every day, it is unnecessary to insist upon it. We need only search the heaps which are brought to the apothecaries' shops, in order to discover plants of very different species from those prescribed by physicians. How greatly would the knowledge of medicine be confirmed, and how many excellent remedies, grounded on the experience of all ages, would be in our possession, if our ancestors had handed down to us as sure characteristics of the plants they made use of, as the praises of their qualities! Our *Materia Medica* would not then have been filled with a number of useless articles; and the conjectures of latter ages about the medicines recommended by the ancients would have been spared, while the knowledge of efficacious medicines would have been rendered permanent and certain for the benefit of mankind. After the lapse of centuries, mankind have employed all their industry to find out the plants mentioned by Dioscorides and others of the ancients, and at length have discovered

that the pursuit was to no purpose. They were obliged to leave the plants of the ancients, and their virtues, in the same degree of obscurity in which they were involved, and to begin de novo the experiments on their medical qualities. All that was gained by their search was, that of about five hundred plants mentioned by Dioscorides, there were hardly twenty known to a certainty, and of them only such as can be considered as culinary or dietetic plants. The multitude of useless and uncertain remedies with which the apothecaries' shops were filled, and of which, even in our times, we have not been able to rid them, is to be charged to those examinations, and proved the only consequence of their labours. We need only mention Hellebore as a proof of this. The variety of opinions among the ancients, relative to the plant to which Sneezewort belongs, which is so highly commended by the ancients, added to the stores of medicinal shops no less than ten sorts of roots, some entirely useless, and others very different in quality from that of the ancients, which is yet not certainly known. But why should we not exculpate both the ancients and their expositors, who lived in very different climates? Botany, in their time, had not been reduced to the form of a science; it is our own age that has given it order and certainty. But notwithstanding this advantage over the ancients, and the opportunity afforded us of examining many of the remedies which the vegetable kingdom affords, even in their native climates, yet we are still in a state of uncertainty with respect to many which are in frequent use, as to  
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the class or family to which they ought to be referred, and with respect to some we are entirely ignorant. Much light, however, has of late years been thrown on this subject, and we have learnt to a certainty the plants from which various medicines are procured; having infallible marks or characters by which to distinguish their affinities: our experience therefore will not be lost to posterity as that of the ancients has been to us, but will remain as long as the plants themselves. No one will deny that the knowledge of plants, grounded on their essential parts, which are constant and obvious, is the surest method of preserving the knowledge of their qualities, when once discovered, from perishing, as well as of determining any doubts or disputes relative to that point. The sight is unquestionably less liable to uncertainty than the smell and taste, which are capable of being perverted by several accidents in such a manner as to give uncertain indications; and how many plants are there, which, though similar in smell and taste, are yet very different in their effects! To this may be added the impossibility of explaining by words these sensations to others: it is surely far easier to inform people through the medium of sight. It may still be objected, perhaps, that colour, a particular afforded by our sight, is still an uncertain character, and is known to vary. Had we no other characters but the internal ones by which we might communicate to posterity the knowledge of those remedies from which we have received so much advantage, they would become both uncertain, and in a little time as unprofitable to them

as.

as those of the ancients are to us; they would soon be commuted for others; our experiments would be laughed at, and posterity would lose the benefit of our discoveries. These are not new truths, but such as are well known, and have often been demonstrated by others; yet they are important, as they serve to evince the uses of botanical science. A certain and exact knowledge of plants from which medicines are taken, is still more necessary with respect to such plants as are not cultivated, but grow wild. By frequent gathering, these plants are liable to be too much diminished, so as not to afford a sufficient supply when requisite, and even to be quite extirpated from the places in which they were first collected. If then we did not know the plant from which such a medicine was prepared, we should not be capable of ascertaining by search, whether nature might not have produced it in other spots; and if we were not able to find it, we must either be without the desired remedy or specific against particular diseases, or else even wish to have it less known, on account of its small quantity. The loss would be the more felt, as the discoveries of ages might perhaps scarcely exhibit any thing that would so completely answer our purposes. An extensive knowledge of the vegetable kingdom, acquaintance with the natural affinities of plants, would perhaps be the only means of leading to the discovery, and on such an occasion might compensate for what we had lost; since, if we wish to find a remedy that most nearly approaches to any particular one, it can scarcely be looked for amongst such as Nature has set

at a wide distance from it. The nearer the several parts of plants approach to each other in point of resemblance, there is so much the greater reason for supposing a similarity of their virtues. He who understands nature will hardly doubt of this: daily experience furnishes proofs of it, not only amongst the vegetable tribes, but also in the other kingdoms of nature, and this in proportion to the natural affinities.

The genus of plants which I have now the honour to propose to the Society, increased by the descriptions of some of the less known species, will serve as a further proof of what has been advanced.

Among the many excellent medicines which have reached our knowledge since the discovery of the New World, the Peruvian Bark deserves undoubtedly the first place. It has been tried in vain to find a substitute for it, scarcely any thing having been yet discovered which might supersede its use. The obstacles which it met with before it was universally adopted, and the different opinions relative to its effects, are sufficiently known. As they do not belong to my scope, it is superfluous to treat of them: the cause of the difference in the experiments made with the Peruvian Bark must be ascribed in part to the frauds which are practised in mixing it with other ingredients of similar colour and taste, though very different in operation, and perhaps even of a contrary nature and of a pernicious effect. Men, while anxious in support



port of their own opinions, did not endeavour to discover the true source of these variations : it was long before the distinctive characters, by which the genuine was to be distinguished from the spurious, were attended to. If a more accurate knowledge of the trees the bark of which thus increased the quantity had not been wanting, or if the tree from which the true bark was taken had been known, we should have been, at least in part, better able to judge in the matter. Attempts have been made, even till the present time, to discover some other remedies which might supply its place, but without success : this enquiry is so much the more necessary, since, according to *Monf. Condamine's* account, published more than half a century ago in the *Mem. de l'Academie des Sciences*, for the year 1738, p. 324 (edit. Amsterdam), we may some time or other be necessitated to lose the Peruvian Bark ; the trees being at that time so much diminished in Peru by frequent decortication, that it was apprehended that in future even a small quantity could scarce be obtained from them. Later experience has shewn that this opinion was not entirely void of foundation. The accounts which I have been enabled to collect during my residence in Spain, all agree in affirming that the tree is nearly extinct in those places where it was formerly found in the greatest abundance : yet, though it has not been discovered in any other region, our fear is vanished as to our one day losing so necessary a drug. Various botanists, who in these latter times have travelled in the West Indies to investigate the natural productions of that part of the world, have found  
several

several species of this genus, which not only resemble the first discovered species as to their qualities, but which even seem, in some respects, to surpass it.

The Peruvian Bark was made use of during a whole century, without its being known from what tree it was taken; and this ignorance would have still continued, had not some botanists obtained an opportunity of seeing it in its native country. The first whom we have to thank for certain and authentic information concerning the genus, is Mons. Condamine. It continued, however, almost inaccessible to us after that time, its native country not being easily visited by naturalists. Few botanists have seen it, and all that we know of it is confined to what Mons. Condamine has related. The various figures we are in possession of are all borrowed from him, though his representation cannot be esteemed a perfect one, and has the appearance of being in some points a little artificial. From what I shall proceed to mention, it will be evident that Linnæus never saw it, but availed himself of Condamine's description and figure to establish the characters of the genus. From the time of Condamine to that of Jacquin's visit to the Caribbee Islands, only one species was known. Jacquin discovered another, which was regarded by Linnæus as dubious, differing in some inconsiderable points from the Peruvian species. The fruit of the Caribbean species was not at that time known; but having since been examined, it clearly belongs to the same genus. Mr. Forster discovered a third

B species

species in the islands of Tongataboo and Eaoree in the South Sea. A fourth was sent from Martinique by Monf. Badier, which is known by the name of Quinquina Piton. Profeflor Swartz, who some years ago made a voyage to the Antilles, besides increasing the vegetable catalogue of those parts with eight hundred and fifty new species, notwithstanding the prior visits of those indefatigable botanists Plumier, Sloane, Jacquin, and Brown, enriched the genus *Cinchona* with two new species, of which one was found in Hispaniola, and the other in Jamaica; which latter, however, he described from a specimen in Sir Joseph Banks's collection. As an addition to all these, I have the honour to exhibit three more, of which one is changed with the Peruvian, and the two others I look upon as unknown, not having been able to find them any where described. The genus is consequently increased to nine species. All the species which constitute this genus agree in the following circumstances, viz. The trunk is a tree: the bark of the branches is of a dark brown-red colour, in some species covered with soft hairs towards the extremities, but in most species without: at the bottom these branches are round, and frequently of a whitish grey, but at the top they become imperceptibly tetragonous: those which bear flowers are distinguished from the others by being alternately compressed to the top: the leaves are opposite; inserted to the branch by a short pedicle; their edges are smooth, or entire, without any denticulations; their lower surface is somewhat more venous, and sometimes the oblique fibres are covered with soft hair; the



upper surface is generally without hair : the substance of the leaves is somewhat membranaceous, and bears a resemblance to that of coffee-leaves : at both sides, betwixt the leaves, is a stipule, which is closely adpressed to the branch : the peduncles sit commonly at the top of the branches of the umbel, these branches being always divided into three, of which the last bears one flower only. Two species have the flowers sitting in the angle formed by the leaves with the branches, and of these one species has only one flower on the peduncle. Where the peduncle is divided into more ramifications, there are two small bractæ at the larger, and one at the smaller. The calyx is one-leafed, above the germen, corolliform, in the same manner as in plants that have opposite leaves and stipules. Sometimes the calyx is only a kind of margin, but always divided into five small points, and much shorter than the corol : the corol is funnel-form, monopetalous, divided into five parts ; the stamina five, inserted at the middle of the interior part of the tube, being either shorter than the tube, or of equal length with the corol ; they are slender and erect : the germen is conical, and bent down, with a pointed tip ; the style is thread-form, of the length of the stamina ; the stigma thicker, and somewhat bipartite : the fruit is an oblong capsule, opening in two parts. From both corners of each part there is a dissepiment separated in the middle with a crevice : the seeds are compressed, and surrounded with a membranaceous margin. All the species are natives of the New World, one excepted, which was discovered by

Dr. Forster in the South Sea islands. In the other parts of the world there has as yet been no species discovered. Three species only are found on the continent of America, and the rest in the Caribbean islands: they seem to prefer mountainous situations.

The genera most allied to *Cinchona* are *Manettia*, *Rondeletia*, *Macrocnemum*, *Bellonia*, *Portlandia*, and some others; and these seem to connect the last division of the *Stellatæ* of Linnæus, such as *Coffea*, *Ixora*, *Pavetta*, with the family of *Contortæ*, to which *Cinchona*, as to the fruit, is nearly related; but it differs in having the fruit below the calyx, and in the divisions of the corol not being contorted into a spiral before their expansion.

The species of this genus are as follows:

1. *Cinchona officinalis*. This is the species from which is taken the genuine Peruvian Bark, and is that which was first discovered: it is the species which has given the character of the genus, and is consequently that which Linnæus mentions in the old editions of his *Systema Naturæ*, and in the 6th edition of his *Genera Plantarum*.

2. *Cinchona pubescens*. So named from the pubescent appearance on the backs of the leaves: its native place the same as the foregoing. From the short and incomplete description

description given by Condamine of a species of *Cinchona* growing on the summits of mountains, and of a whitish appearance, it should seem to be this.

3. *C. macrocarpa*. So named from the superior size of the fruit in comparison to that of the others. This is the species discovered by Mutis in large woods in Santa Fé in America: it is undoubtedly this species which Linnæus describes in the twelfth edition of the *Systema Naturæ*. On comparing Linnæus's description with that of Condamine, and the figure given by him of *C. officinalis*, it is evident that it by no means agrees with it; but on the contrary it perfectly accords with my own of the *C. macrocarpa*: and of this I am the more convinced, as Mutis never sent specimens into Europe of the *C. officinalis*, it being never found at Santa Fé; and lastly, that the specimen preserved in the Linnæan collection is *C. macrocarpa*, and not *officinalis*: its bark is white, and rather more bitter than that of the *officinalis*. Some years ago a quantity of it was imported to Madrid, and was tried by several physicians, who all agreed in declaring it equal to the Peruvian.

4. *C. Caribæa*. Described in the *Philosophical Transactions* by a Mr. Wright.

5. *C. floribunda*, or *Quinquina Piton* of Mons. Badier. The bark of these two species is found of equal efficacy in inter-



intermittents. They promote a tendency to vomition, and are also purgative. Several persons in England have assured me that these are preferred in the West India islands to the Peruvian. Both these species were sent me from St. Croix.

6. *C. corymbifera*. This, according to Forster, has the greatest resemblance in appearance and taste to the officinalis or Peruvian: a description at large is given of it in the Nov. Act. Ups. tom. 3. p. 176.

7. *C. brachycarpa*, and

8. *C. lineata*,

Are both so nearly allied to *C. floribunda*, that it is difficult to find sufficient distinctions between them, and there is reason to expect the same effect from them as from the others. Nothing but repeated experiments can determine whether the several kinds are equal to the Peruvian, or which may in reality deserve the preference; but from the experiments which have already been made, it clearly appears that they are far better substitutes than any other Barks which have been occasionally made use of for that purpose.







*Cinchona officinalis.*

J. Barlow sculp.



C I N C H O N A,

So named from the Countess del Cinchon, Lady of a Spanish Viceroy, whose cure is said first to have brought the Peruvian Bark into reputation.

Lin. Gen. p. 228. Reich. No. 245. Schreb. 301. Gærtn. t. 33. Juss. 201.

Quinquina Condam. Act. Gall. 1738.

CHARACTER ESSENTIALIS.

Capsula (infera) bilocularis, bipartibilis; valvulis diffe-  
pimentis parallelis interne dehiscentibus.—Swartz. in Act.  
Holm. 1787, p. 119.

CHARACTER NATURALIS.

Cal. Perianthium monophyllum, superum, breve, per-  
sistens, quinquedentatum: dentibus acutis.

Corolla monopetala, infundibuliformis, quinquefida.  
Tubo longo, obscure angulato: laciniis lanceolatis vel  
linearibus, tubum æquantibus.

Stam. Filamenta quinque in medio tubi.

Antheræ lineares, erectæ.

Pistil.

Pistil. Germen inferum, turbinatum, obscure angulatum. Stylus longitudine staminum.

Stigma crassum, bifidum vel integrum.

Per. Capsula calyce coronata, bipartibilis, intus medio dehiscens, dissepimento parallelo.

Semina plura, oblonga, compressa, ala membranacea cincta.

HABITUS GENERIS.

Caulis arboreus. Rami teretes, superne obscure tetragoni; floriferi alternatim compressi.

Folia opposita, indivisa, integerrima. Stipulæ foliis interpositæ, ramis adpressæ. Inflorescentia in plerisque paniculata, brachiata, pedunculis trifidis.

SPECIES.

Floribus tomentosis, staminibus inclusis.

*C. officinalis*—*Cinchona* foliis ovato-lanceolatis, glabris, capsulis oblongis. Tab. 1.

*Quinquina* Condam. in Act. Paris. 1738, cum tab.

*Cinchona officinalis*. Lin. S. V. ed. 10. p. 929. Spec. Plant.

Plant. p. 244. Vahl. Act. Soc. Hist. Nat. Havn. fasc. 1. p. 17. tab. 1. Vahl. Symbol. Botan. fasc. 3. p. 37. Miller Dict. ed. a Martyn, vol. 1. Diff. Med. Inaug. de Cinchona off. Lin. per Ricar. Pulteney, cum fig. Reich. 1. 476. Gært. Fruct. 1. 169. Swartz. Obser. 72. Commers Noric. 1744, p. 217. t. 1. f. 3. Plenck. Ic. t. 131. Wood. Med. Bot. 546. t. 200. Lamark. Encycl. pl. 164. f. 1. Lin. Mat. Med. N° 71. Quinquina Geoffr. Mat. Med. tom. 2. p. 180. Alston. Ind. Med. Tripl.—Cortex Peruvianus, Peruanus, China Chinæ, Quinquina officin. Dalei Pharm. ed. 3. p. 291. Lewis Mat. Med. p. 427. China Chinæ, Hoffman Suppl. 11. par. 2. Mat. Med. p. 166. Vogel Hist. Mat. Med. p. 287. Arbor febrifuga Peruviana Raii Hist. Plant. tom. 2. p. 1796.

Habitat in Loxa Peruviae.

Cin. off. Rami cortice fusco-purpurascens, sæpe e rimis transversis obliquis scabri, cicatrisati post casum foliorum.

Folia petiolata, ad apices ramorum approximata, in ramis floriferis remota, patentissima, bipollicaria, ovata vel ovato-lanceolata, acuta, lævia, utrinque glabra, supra subavenia, oblique nervosa, nervis inferioribus oppositis; subtus paulo pallidiora, venosa.

Petioli femipollicares, supra canaliculati, subtus convexi, versus basin rugoso-scabri.

C

Stipulæ

Stipulæ utrinque binæ, minutæ, acutæ.

Panicula terminalis, patens, trichotoma. Pedunculi et pedicelli leviter tomentosi : Pedicelli uniflori.

Bractea minuta ad basin et in medio pedicelli.

Calyx margo superus, quinque-dentatus : dentibus brevissimis.

Corolla vix unguicularis, extus tomentosa : laciniis acutis, intus lanatis, tubo brevioribus.

Filamenta tubo breviora. Antheræ longitudine tubi.

Germen tomentosum. Stigma apice incrassatum subbifidum.

Capfula oblonga, glabra, femipollicaris, lineis obscuris elevatis.

The plate here given of the *Cinchona officinalis* Lin. appeared some years ago annexed to a publication entitled *De uso e abuso das Minhas agoas de Inglaterra*, Londres, 1756, by Jacob de Castro Sarmiento—but without its history, or any account of it : and it is somewhat extraordinary how it came into the publisher's possession. It seems to be very little known, and has not been  
quoted



quoted by any author, I believe, except Dr. Pulteney, in his *Diff. de Cinchona*, and who informed me that his figure was communicated to him by Dr. Hope of Edinburgh.—Mr. Hawkins, now living at Dorchester, Dorset, a contemporary of Sir Hans Sloane, and with whom he lived for some time in the latter part of his life, was so obliging as to favour me with an impression of this plate, accompanied with the following letter. He also favoured me with an account of the Cinchona by Condamine, and which seems the same already published by Condamine himself in the French Transactions.

MR. HAWKINS'S LETTER.

Dorchester, Oct. 12, 1795.

DEAR SIR,

I RECEIVED the favour of yours, and in return shall give you all the information I am able concerning the Cinchona. The specimens which I made the drawing from came inclosed in a large quantity of the bark, several pieces of wood with the bark on, and branches of the leaves in flower and seed, packed up in a cow or ox-hide, as a present from Monf. Condamine (then residing in Peru) to Dr. Cromwell Mortimer, Corresponding Secretary to the Royal Society in the year 1740. The specimens were in a dried crumpled state, which I expanded by means of warm water, in order to complete the drawing. The plate was engraved at the expence of the Royal



Society, has been since lost, and cannot be found, as Sir Joseph Banks told me when in London.—Also were included in the same parcel specimens of the plant with the three leaves along-side of the main stalk, as represented in the drawing \* you had before of me with the kidney-shape seed, and which is described by Monf. Condamine in the Memoirs of the Academy of Sciences in his account there of the Jefuits Bark ; which was first used for curing intermittents before the present was known. I wish the above may prove of use to you.

I am, Dear Sir,

Your most obedient, humble Servant,

J. HAWKINS.

\* The drawing, with its description, was by me presented to the Linnæan Society, and will appear in the 3d vol. of their Transactions.







*Cinchona pubescens.*

J. Hooker, sculp.



CINCHONA PUBESCENS, PL. 2.

Cinchona foliis ovatis basi elongatis, subtus pubescentibus, capsulis cylindricis. Vahl. in Act. Havn. 1. 1. p. 19. t. 2. Mill. Dict. Mart.

Habitat in Peru. Amicissimo viro cel. Dn. Jussæo hanc debeo.

Rami superne pubescentes.

Folia petiolata, spithamæa, palmam lata, obtusa, basin parum per petiolum decurrentia, tenera, venosa, subtus nervis pubescentia.

Petiolus bipollicaris, pubescens, subtus convexus.

Panicula terminalis, brachiata, pubescens. Pedunculi partiales bifrifidi: Pedicellis brevissimis unifloris. Bractæ minutæ ad basin pedicellorum.

Calyx margo superus, quinquentatus: dentibus minutis, ovatis, acutis.

Corolla præcedentis. Tubus medio incrassatus.

Stamina & Pistillum ut in C. officinali.

Capsula cylindrica pollicaris, utrinque parum angustata.



CINCHONA MACROCARPA, PL. 3.

Cinchona foliis oblongis subtus pubescentibus costatis.

Cinchona officinalis. Lin. S. V. ed. 12. p. 164. descriptio.

Cinchona officinalis foliis ellipticis subtus pubescentibus, corollæ limbo lanato. Lin. Suppl. p. 144. S. V. edit. 14. p. 213. Vahl. in Act. Havn. 1. 1. p. 19. t. 2. Mill. Dict. Mart.

Habitat in regno Santa Fé. Dedit. Dn. Ortega.

Rami articulati, crassitie pennæ cygneæ, villoso-tomentosi.

Folia petiolata, plusquam palmaria, oblonga, juniora elliptica subcoriacea, supra nitida, glabra, subtus pubescentia, costata : costis villoso-tomentosis. Juniora supra pilosa, præsertim secundum nervos.

Petiolus pollicaris, supra planus, subtus convexus.

Stipulæ lanceolatae, deciduæ, petiolo longiores, basi connatae, intus glabrae.

Panicula





*Cinchona macrocarpa* P.





Panacula terminalis, trichotoma, pubescens.

Pedunculi compressi triflori sesquipollicares.

Flores subsessiles.

Braçtea lineari-lanceolata utrinque ad divisuras pedunculi universalis, pollicaris, & alia subulata ad basin singuli floris, parva.

Calyx campanulatus, pubescens, intus sericeus, quinque-dentatus, rarius sexdentatus: dentibus obsolete, acutis.

Corolla coriacea, sesquipollicaris, pilis minutis adpressis tomentosa. Limbi laciniæ lanceolatæ, obtusæ, longitudine tubi.

Filamenta brevissima. Antheræ lineares, faucem parum superantes.

Germen pentagonum. Stigma bifidum.

Capfula cylindrica, bipollicaris, glabra, basi parum angustior. Valvulæ dissepimenti basi apiceque finu magis hiantes.



CINCHONA CARIBÆA, PL. 4.

\*\* Corollis glabris, staminibus exsertis.

*Cinchona pedunculis axillaribus unifloris.*

*Cinchona caribæa.* Lin. Spec. 245. Syft. 214. Reich. 477. Jacqu. Amer. 61. t. 169. t. 95. Piçt. 35. t. 63. Obf. 2. 27. t. 47. Vahl. in Act. Havn. 1. 1. p. 21. Swartz. Obf. 72. Gærtn. Fruct. 1. 169. Pluk. Phyt. t. 103. f. 3. Plenck. Ic. t. 132. Vit. Sum. Pl. vol. 1. p. 461.—Mill. Diçt. Mart. Murr. App. Medic. vol. 1. p. 339.

*Cinchona jamaicensis, seu caribbeana.* Wright in Philof. Tranf. vol. 67. p. 504. 506. t. 10.

Habitat in Caribæis.

Rami inferne teretes, cortice cinereo ; superne subcompressi, fusco-purpurascens, punctis cinereis adspersi.

Folia petiolata, sesquipollicaria, ovata, acuminata, integerrima, glabra, venosa.

Petiolus vix semiungularis.

Stipulæ parvæ, acuminatæ, latiores quam longæ, ciliatæ.

Pedunculi





*Pinchona caribaea.*

Fréd. Bauer del.

J. Burlew sculp.





*Cinchona corymbifera.*

Ferd. Bauer del.

J. Barlow sculp.



Pedunculi axillares, folitarii, oppositi, longitudine petioli.

Calyx margo quinquentatus : dentibus minutis.

Corolla bipollicaris, glabra. Laciniae limbi lineares, longitudine tubi.

Stamina longitudine corollae.

Stylus longitudine staminum. Stigma incrassatum, indivisum.

Capfula oblonga, glabra, laevis.

CINCHONA CORYMBIFERA, PL. 5.

Cinchona foliis oblongo-lanceolatis, corymbis axillaribus. Lin. Syst. 214. Suppl. 144. Forster in Nov. Act. Upf. 3. 175. Flor. Austral. N. 88. Vahl. in Act. Havn. 1. 1. p. 22. Mill. Dict. Mart. Vit. Sum. Plant. vol. 1. p. 461.

Habitat in Insulis Tongatabu & Eaove Maris Pacifici.

Folia petiolata, palmaria, acuminata, integerrima, glabra, saturate viridia, nervo subtus purpureo.

Petiolus vix uncialis.

Stipulae membranaceae, acutae.

D

Pedunculi

Pedunculi solitarii, axillares, apice compressiusculi, longitudine foliorum.

Corymbus trichotomus, magnus. Forst. l. c.

CINCHONA LINEATA, PL. 6.

Cinchona panicula terminali, foliis ovatis acuminatis glabris. Capsulis pentagonis. Vahl. in Act. Havn. I. p. 22. t. 4. Mill. Dict. Mart.

Habitat in St. Dominica.

Rami inferne teretes, cortice cinereo; superne purpurascens.

Folia brevissime petiolata, sesquipollicaria, ovata, acuminata, minime nitida, obtusiuscula, supra secundum nervos lineata.

Stipulæ ovatæ, acutæ.

Panicula terminalis, trichotoma: Pedunculi compressi, triflori.

Braçtea fetacea ad basin pedicellorum.

Calycis dentes fetacei, longitudine germinis.

Corolla & Stamina ut in insequente.

Germen pentagonum.

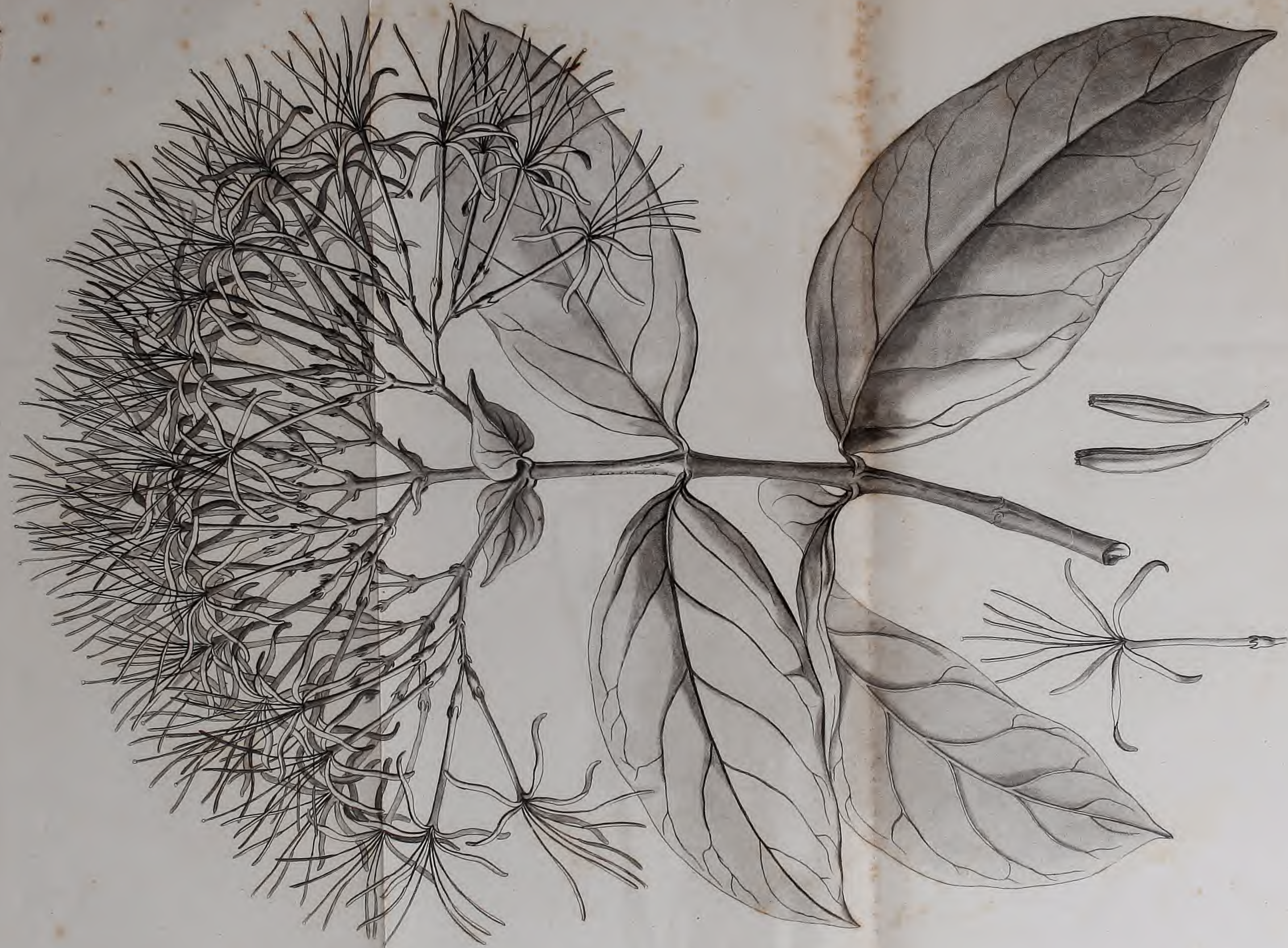


*Sambonia linearis*



J. Norton sculp.





*Cinchona floribunda*

For. Bauer del.

J. Burckm. sculp.



Differt a *C. floribunda* foliis minime nitidis, basi rotundatis, minoribus, supra lineatis. Panicula parva: laciniis calycis fetaceis longitudine germinis. Capsulis lineis quinque elevatis, nec lævibus.

CINCHONA FLORIBUNDA, PL. 7.

*Cinchona* panicula terminali, capsulis turbinatis lævibus, foliis ellipticis acuminatis. Swartz. Prod. 41. Vahl. in Act. Havn. 1. 23. Philos. Transf. vol. 74. p. 452—456. t. 19.

*C. montana*. Magaz. Bot. 6. 96. t. 3.

Kinkiná Piton. Act. Nat. Cur. 1787. Rozier Journ. de Phys. 1781. p. 169—179. and 1789, p. 129—132. t. 1. Mill. Dict. Mart. Murr. App. Medic. vol. 1. p. 941.

Habitat in St. Lucia, Martinica, Hispaniola.

Tota glaberrima.

Rami inferne teretes, superne obscure tetragoni, purpurascens.

Folia *Coffeæ arabicæ* petiolata, sæpe spithamæa, patentissima, lanceolato-elliptica supra lævia, nitida, medio sulco exarata, subtus pallidiora, venosa, nervosa: nervis obliquis parum elevatis.

Petiolus semipollicaris, subtus convexus.

Stipulæ oblongæ, obtusæ, vaginantes.

Panicula terminalis, brachiata, patens. Pedunculus communis alternatim compressus, sub ramificationibus parum compressus.

Pedunculi partiales & pedicelli compressi.

Calyx margo superus; dentibus subulatis, brevissimis.

Corolla Cinch. caribææ; tubo pollicari: Laciniaë limbi lineares.

Filamenta capillaria, longitudine limbi.

Stylus longitudine filamentorum. Stigma ovatum, indivisum.

Capfula unguicularis, obovata.

#### CINCHONA BRACHYCARPA, PL. 8.

Cinchona panicula terminali, capfulis obovatis costatis, foliis ellipticis obtusis. Vahl. in Aët. Havn. 1. p. 24. Swartz. Prod. 42. Mill. Dict. Mart.

Habitat in Jamaica.

Folia fere ut in macrocarpa, at sicuti tota planta glabra, brevissime petiolata.

Flores





Red. Haas del.

*Simulium brachycephalum*

J. Hudson, sculp.





*Cinchona angustifolia*



Flores duplo minores quam in præcedente.

Capfula obovata, lineis decem elevatis costata.

CINCHONA ANGUSTIFOLIA, PL. 9.

Cinchona panicula terminali, capfulis oblongis pentagonis, foliis lineari-lanceolatis pubescentibus. Swartz. Prod. 42. Act. Holm. 1787. p. 117--123. t. 3. Vahl. in Act. Havn. 1. p. 25.

Habitat in Hispaniola.

Rami cortice cinereo. Ramuli simpliusculi, pubescentes.

Folia petiolata, acuminata, obtusiuscula, subtus pubescentia.

Petioli breves, pubescentes.

Stipulæ ovatæ, acutæ.

Panicula trifida vel trichotoma. Pedunculi pedicelli villoso-pubescentes.

Calyx pubescens : dentibus subulatis, longitudine germinis.

Corolla Cinchonæ caribææ, at longior.

Stigma incrassatum, oblongum, integrum.

Capfula oblonga, teretiuscula. Schwartz. l. c.

MR.



## MR. BROWN'S LETTER.

SIR,

HAVING been informed of your intention of publishing an account of the different species of the genus *Cinchona*, permit me to present you with a species of Peruvian Bark new at least to me, and which I believe is very little known in this country\*.

In the year 1793 I was engaged to go Surgeon of the *Speedy Transport*, Captain Thomas Melvill, belonging to Mr. Enderby and Sons, Paul's-Wharf, London. We were first bound to New South Wales with provisions, and afterwards on the Sperm whale fishery along the coasts of Chili and Peru. While fishing near the Gallapagoe islands, our crew unfortunately being seized with the sea scurvy, it was found absolutely necessary to make the main in order to refresh them. The Captain intended Manta for this purpose, a small Indian village lying to the southward of the Equator; but the wind and current baulking us, we were obliged to bear away and run for Tecamez, another Indian village, situated in 46 miles north latitude, and probably near 80 degrees west longitude. Here

\* This appears certain from a collation of the leaves with all the species, preserved in Sir Joseph Banks's Herbarium, with none of which they agree. A most faithful representation of these leaves is given at plate 11.



*Bot. Amer. Atl.*

*Leaves of the Banks Tree of Secamora.*

*Banks. Juss.*







we lay for ten days, until our people were mostly recovered.

As the province of Quito, to which Tecamez belongs, is celebrated for producing the Peruvian Bark, I confess I was uncommonly anxious to see a tree so justly valuable for its various medicinal virtues. But the sort commonly used in Europe grew more in the interior parts of the country than the places I visited; and my attention was called to a new species, which I was informed had been found singularly efficacious by the medical gentlemen in South America. As the master of the ship who gave me the intelligence, and who traded in it, was unfortunately to sail the next morning, he first very obligingly agreed with an Indian to take and shew me the tree, and at the same time spoke to the Governor in my favour, who kindly promised to supply me with a small quantity of its best kind—a promise he afterwards very generously performed.

That attention which was due to the state of our sick prevented me from many enquiries that otherwise might have been made on the subject; but from the limited opportunities I had of making observations, Tecamez Bark seems to be all of one species, as the trees I examined were of the same kind, and the fineness of their bark was estimated by the age of the tree. Young trees of two years old were much valued, their Bark being thin, brittle, aromatic and  
astringent.



astringent. That of old trees is thicker; when dried turns blackish on the inside, and of a darkish red in the middle. The other when broke is of a paler red, but all of them when left to dry in the sun twist themselves close together, and turn very dark on the inside. This circumstance, however, may be easily prevented; for, by peeling off the thin inside skin as it is taken from the tree, and exposing the Bark not too hastily to the sun, it will assume a fine cinnamon colour, and appear very handsome to the eye.

Notwithstanding the predilection in favour of the young tree, I am apt to suppose its Bark possesses only an imaginary virtue. When reduced to powder, both are so nearly alike, that it is extremely difficult to distinguish them: and in whatever form it is given, they are equally powerful and efficacious. A gentleman of some eminence told me that he thought them a tenth stronger than the Cortex usually sold in London. As I had some of the latter in substance from the Hall, whose genuineness I knew could be depended upon, the following is an observation or two I made on that subject. Tecamez Bark differs from that sold by the Hall in colour, strength and taste. Its colour is more a brownish green, spread over with a whitish moss; the inside darker, and of a deep red inclinable to black. When broke it appears of a pale red, and has a most pleasant bitter taste, rather aromatic, but not so astringent as that I had in the  
 medicine

medicine chest. When boiled however with the same quantity of water, or infused in it when cold, its strength is superior, and its taste far more agreeable. If its virtues are drawn off by spirits, they equal that I had from the Hall, and in four cases fat easy upon the stomach, when the other did not. As many of our people unhappily laboured under a severe ague on our return, I thought that a proper opportunity of trying their effects; for, whatever may be advanced to the contrary, experience has taught me that in many instances Bark is highly serviceable in this disorder. Having selected two people with the same symptoms, I gave it to them in equal doses, and by the use of Tecamez Bark one recovered a week before the other. I tried it again—the difference was five days. I had only an opportunity of repeating it a third time, and it was seven. But I would not wish to be understood as if I thought these few cases sufficient to ascertain its superior effects with certainty. That must be left to future experiments, and to gentlemen of greater penetration, and who have more ample opportunities of making them than the writer of this article can pretend to possess.

All the trees I saw grew on the side of a hill, and in a dry barren soil. The mould was of a red colour intermixed with small stones, and not above a foot deep; for several of their roots appeared at the surface, and few that I examined were covered more than two inches by the earth. None of them were in bloom in August, nor



had the least appearance of seed. Neither could I obtain any of it at Tecamez. This is an article they set very little value on themselves, and are wonderfully surpris'd it should be enquired after. Of the tree indeed they are more careful, and very cautious in shewing it. Had it not been for the friendship of the gentleman I mentioned, it is more than probable I should have returned without seeing it at all.

I remarked that all the Bark Trees I saw grew on the side of a hill, and in a dry rocky soil. None of them exceeded two feet in circumference, nor any of them 24 feet in height. The mode the Indians use in stripping the tree, is by making longitudinal incisions in the bark about two inches broad, and two feet long. They then tie it up in bundles, thirty-two pounds each, and keep it in that state for a day or two. Their reason for tying it up in this manner is to prevent its too hastily drawing itself together by the heat, though it labours under a great disadvantage of appearing iron-coloured, and not so handsome to the eye as when it is at once expos'd to the sun, and regularly turned and dried. Indeed, in drying Bark great care ought to be taken that it is not put away too suddenly. It should be perfectly crisp, and break short in two—it is then fit for use.

Their method of conveying it from one place to another is by stowing it in large leathern trunks. When the trunk is damp it is apt to get mouldy : but this they consider as of small importance ; for by drying it in the sun its mouldiness

diness in a short time disappears, and they affirm its virtues are not at all lessened by such an accident. The price it fetches at Guayuil is 1s. 3d. per pound, while the common sort sells at 1s.

Tecamez Bark is used for all disorders in which the common Peruvian Bark is found serviceable; but it is imagined to possess a peculiar efficacy in removing indigestion, weakness of the stomach, and in restoring a debilitated constitution. It is also said to be powerful in repelling all tendencies to mortifications, and to be highly serviceable in seminal weaknesses and gleans—a complaint to which the inhabitants of South America are not a little subject.

The mode of giving Tecamez Bark is various, and depends in a great measure upon the disease for which it is prescribed. As it sits easy upon the stomach and creates little or no nausea, it may be exhibited in any form that is most agreeable. A Surgeon of great eminence told me the best mode of using it was in a cold infusion. He poured sixteen ounces of cold water over one ounce of the Bark coarsely powdered, and let it stand four hours. He sometimes simmered it afterwards over a slow fire for ten minutes, and, having strained the decoction, added two ounces of spirits, and gave three table spoonfuls occasionally. But very often he omitted boiling it, and, having added the same quantity of spirits, gave the cold infusion as I have mentioned.



Such, Sir, are a few hasty observations on this new species of Peruvian Bark. They are very limited, I confess; for my opportunities of enquiry were not only few, but sometimes interrupted. If, however, they awake the attention of Gentlemen, who are not only more capable of treating the subject, but have better opportunities of trying its effects than I can pretend to be possessed of, my intention in sending you these trifling and imperfect hints will be fully answered.

I have the honour to be, Sir,

With due respect,

Your most obedient Servant,

D. BROWN.

Dec. 5, 1796.

P. S. I omitted to mention, that upon my arrival at Lisbon I was informed of the Yellow Bark being in great repute, and was favoured with the sensible and ingenious essay that has been written on the subject. It occurred to me that this new Bark might be of the same sort; and I shewed it to Mr. Baker, an English Surgeon of the most extensive practice in the place, who likewise gave a specimen of it to the first Physicians in that city. Upon an accurate examination they found it a very distinct species, and of a kind they had never seen. They told me they did not think any of it before had been brought to Europe.

The

The Sandal Tree\* likewise abounds at Tecamez, and is mostly found in the same soil as the Bark Tree. Its gum is used by the Spaniards for perfuming their chambers—incensing the altar at high mass, and in many other religious ceremonies. The Indians likewise use its leaves by rubbing them between their hands, and applying them bruised to their temples, as a certain cure for the head-ach after severe drinking. The Boldu is also used in the same manner for this purpose. Whether the Sandal Tree is the same whose gum is so valued for religious purposes in the East Indies (as I was informed it was), or whether it is a distinct species of itself, I am unfortunately not versed enough in botanical researches to determine.

\* A different plant from the Sandal Wood of the East Indies (*Sirium myrtifolium* Lin.), as appears by a specimen of the wood brought over by Mr. Brown, and now in my possession: this wood, which abounds with resin, has very much the smell, when burnt, of the Yellow Gum of Botany Bay.



CINCHONA LONGIFLORA, PL. 12\*.

Cinchona pedunculis axillaribus unifloris, foliis lineari-lanceolatis glabris, corolla longissima.

Cinchona Caribæa? Journ. de Phys. Oct. 1790. p. 243. t. 1 †.

Habitat in Guiana.

CINCHONA SPINOSA, PL. 13.

Cinchona foliis minimis subrotundis, pedunculis unifloris, corollis glabris quadrifidis tetrandris, feminibus submarginatis.

Folia aliquando bina opposita, aliquando terna verticillata.

Lin. Syst. Veg. Gmel. p. 361.

Vavasseur, Journ. de Phys. Oct. 1790 p. 243. t. 2.

Habitat in Domingo—Baron de Beavais.

\* From a specimen in Aublet's Herbarium, now in the possession of Sir Joseph Banks.

† This appears to be a very different plant from *Cinchona Caribæa* Lin.

Figures 1, 2, 3, 4, 5, 6, are taken from Tab. above quoted in the Journ. de Physique.

The





*Lonicera longiflora.*

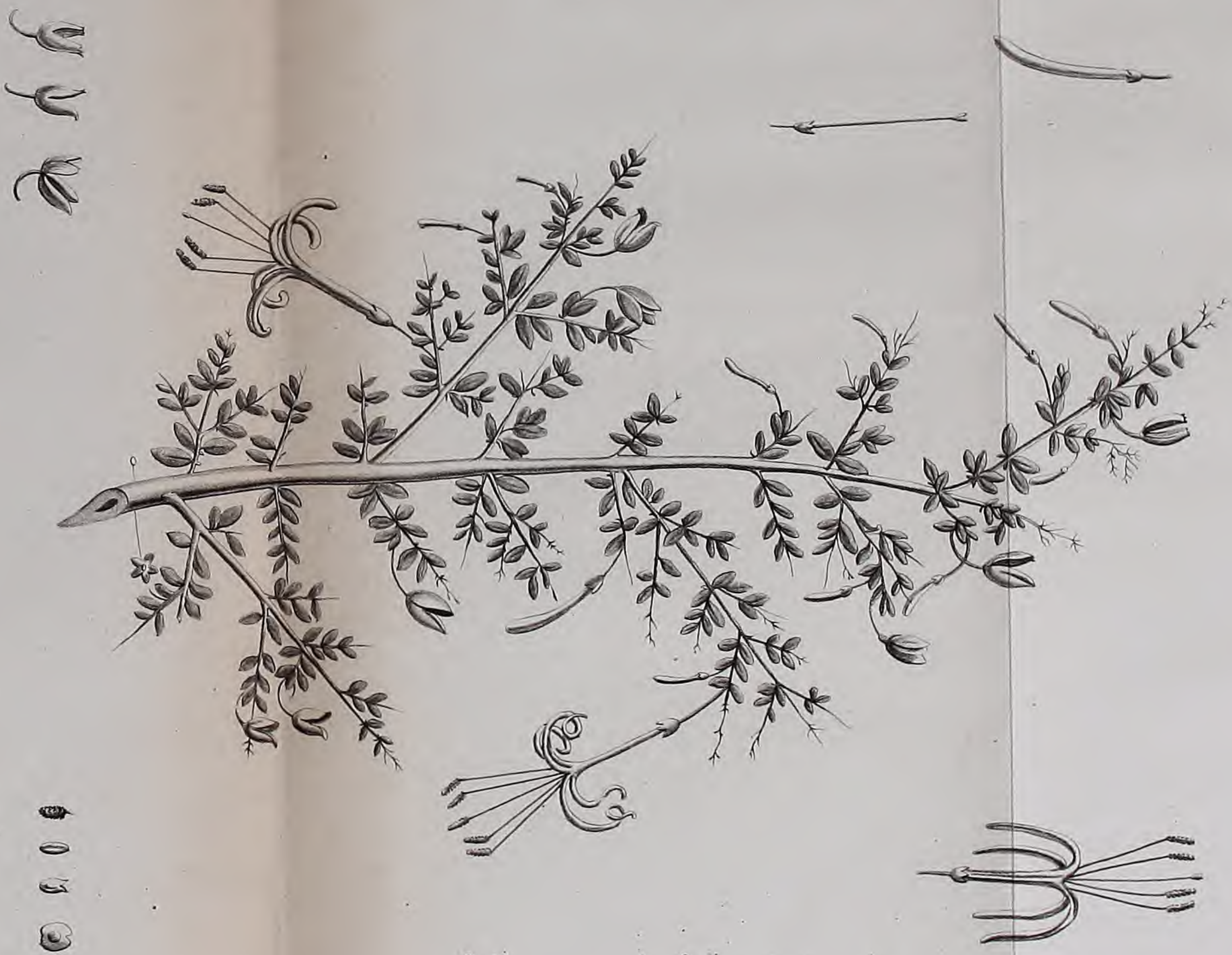
Fred. Shaw del.

A. Barton sculp.









*Pinckona spinescens.*

*J. Barton sculp.*





The virtues of the genus *Cinchona* are so well described in Dr. Woodville's excellent publication, intituled *Medical Botany*, that we have taken the liberty to copy the Doctor's account with scarce any material alteration. It is as follows, viz.

WE seem to have no satisfactory account at what time, or by what means, the medicinal efficacy of the Peruvian Bark, which is now so well established, was first discovered. Some contend that its use in intermittent fevers was known to the Americans long before the Spaniards possessed Peru, but that they concealed this knowledge from the Europeans; and, on the contrary, it is asserted by others, that the Peruvians never supposed it to be fit for any medicinal use, but thought that the large quantities exported thence were for the purpose of dyeing, and they actually made some trials of its effects in this way\*. Condamine says, that according to an ancient tradition, the Americans owe the discovery of this remedy to the lions, which some naturalists pretend are subject to a kind of intermitting fever, of which they were observed to be cured by instinctively eating the Bark of the *Cinchona*. But Geoffroy states, that the use of the Bark was first learned from the following circumstance:—Some *Cinchona* trees being thrown by the winds into a pool of water, lay there till the water became so bitter that every body refused to drink it. However, one of the neighbour-

\* Ulloa, Voyage de l'Amerique meridionale, t. i. p. 271.

ing



ing inhabitants being seized with a violent paroxysm of fever, and finding no other water to quench his thirst, was forced to drink of this; by which he was perfectly cured. He afterwards related the circumstance to others, and prevailed upon some of his friends who were ill of fevers to make use of the same remedy; with whom it proved equally successful\*. The use of this excellent medicine, however, was very little known till about the year 1638; when a signal cure having been performed by it on the Spanish viceroy's lady, the Countess del Cinchon, at Lima, it came into general use, and hence was distinguished by the appellation Pulvis Comitiffæ, or the Countess's Powder; also called, Cortex china china, or chinchina; kina kina, or kinkina; and quina quina, or quinquina. On the recovery of the Countess she distributed a large quantity of the Bark to the Jesuits, in whose hands it acquired still greater reputation, and by them it was first introduced into Europe †, and hence called Cortex, or Pulvis jesuiticus, Pulvis Patrum; and also Cardinal de Lugo's Powder, because that charitable prelate bought a large quantity of it at a great expence for the use of the religious poor of Rome.

“ This Bark is brought to us in pieces of different sizes, some rolled up into short thick quills, and others flat: the outside is brownish, and generally covered in part with a

\* Mat. Med. Traité, p. 78.

† Louis the Fourteenth, when Dauphin, was said to be one of the first in Europe who experienced its efficacy.

whitish

whitish mofs: the inside is of a yellowish reddish or rusty iron colour. The best sort breaks close and smooth, and proves friable betwixt the teeth: the inferior kinds appear when broken of a woody texture, and in chewing separate into fibres. The former pulverizes more easily than the latter, and looks, when powdered, of a light-brownish colour, resembling that of cinnamon, or somewhat paler. It has a slight smell, approaching as it were to mustiness, yet so much of the aromatic kind as not to be disagreeable. Its taste is considerably bitter, astringent, very durable in the mouth, and accompanied with some degree of aromatic warmth, but not sufficient to prevent its being ungrateful \*.”

Besides this Bark, that of several other species of *Cinchona* have been recommended for medical use by different authors, especially the *Cortex peruvianus ruber*, or red Bark; also that of the *Cinchona caribæa*, or the Jamaica Bark; that of *Cinchona floribunda* produced at St. Lucie; and that of two or three other species discovered at Santa Fé. The first of these “is in much larger and thicker pieces than the common; most of the pieces are concave, though not rolled together like the quilled Bark. They break short, like the best common Bark, and appear evidently composed of three layers. The outer is thin, rugged, frequently covered with a mossy substance, and of a reddish-brown colour. The middle is thicker, more

\* Lewis, M. M. p. 485.



compact, and of a darker colour : it is very brittle and resinous. The innermost layer is more woody and fibrous, and of a brighter red. In powdering this Bark, the middle layer, which seems to contain the greatest proportion of resinous matter, does not break so readily as the rest ; a circumstance to be attended to, lest the most active part should be left out of the fine powder. This red Bark to the taste discovers all the peculiar flavour of the Peruvian Bark, but much stronger than the common officinal sort. An infusion in cold water is intensely bitter, more so than the strongest decoction of common Bark. Its astringency is in an equal degree greater than that of the infusion of common Bark, as is shewn by the addition of martial vitriol. The spirituous tincture of the red Bark is also proportionably stronger than that of the pale. The quantity of matter extracted by rectified spirit from the powder of the former was to that from the latter as 3 to 2 in one experiment, and as 229 to 130 in another ; and yet on infusing the two residuums of the first experiment in boiling water, that of the red Bark gave a liquor considerably bitter, and which struck a black with martial vitriol ; while that yielded by the other, was nearly tasteless and void of astringency\*.”

Respecting the medicinal properties we have several respectable authorities, shewing, that as the red Bark possesses the same virtues with the common, in a much higher

\* Lewis, l. c.

degree,

degree \*, so it has been found of more efficacy in the cure of intermittents : and hence it is thought to be that which, according to Arrot, the Spaniards called *Cascarilla colorada*, and was probably the kind originally brought to Europe, and which proved so successful in the hands of Sydenham, Morton, and Lister ; for it appears from the testimony of the oldest practitioners, that the Bark first employed here was of a much deeper colour than the common Bark †. The red Bark was first imagined by Dr. Saunders ‡ to be that of the trunk of full grown trees, the branches or young trees of which yield the pale or common Bark : but this opinion the Doctor seems afterwards to have abandoned ; for in the third edition of his pamphlet on this subject he says, “ that he has lately seen some exceedingly good red Bark imported by a Spanish merchant, a considerable part of which was as small as the quilled Bark in common use, &c. It was extremely resinous, and gave evident proofs of its being the quill of the larger red Bark which was in the same chest.” If the pale and red Bark were really the produce of the same species of *Cinchona*, the latter differing from the former only by acquiring greater maturity, we should find the deepness of the colour of the pale Bark to correspond proportionably with its thickness or the size of the quill, which is certainly not the case. The *Cinchona caribæa* is described

\* Irving's and Skeete's Experiments.

† Baker, *Med. Transf.* vol. iii. p. 161.

‡ Observations on the superior efficacy of the red Peruvian Bark in the cure of fevers.



and figured by Jacquin \* and Dr. Wright †; it grows in Jamaica, where it is called the Sea Side Beech. According to Dr. Wright, the Bark of this tree is not less efficacious than that of the Cinchona of Peru, for which it will prove an useful substitute; but by the experiments of Dr. Skeete it appears to have less astringent power ‡. The Cinchona floribunda, or Bark tree of St. Lucie, a figure of which we find in Phil. Transf. also in Rozier's Observations sur la Physique, affords a Bark which is likewise said to have been used with advantage; but notwithstanding all that has been written to establish its medicinal character §, it seems to us greatly inferior to that of the other species of this genus. In its recent state it is considerably emetic and cathartic; properties, which in some degree it retains on being dried; so that the stomach does not bear this Bark in large doses, and in small ones its effects are not such as to give it any peculiar recommendation. Several species of Cinchona have lately been discovered at Santa Fé, yielding Barks both of the pale and red kind; and which, from their sensible qualities, are likely upon trial to become equally useful with those produced in the kingdom of Peru ||.

\* Amer. Pist. tab. 23.

† Phil. Transf. vol. 67.

‡ Exper. p. 339.

§ See Kentish. Exp. and Observ. on the Peruvian Bark. Davidson in Phil. Transf. vol. 74. and Transf. of the American Phil. Soc. vol. 2. Mallet in Mem. sur le Quinquina de la Martinique, &c.

|| See Memoria o Dissertazione sopra la nuova China del regno de St. Fé, &c.

At present the use of the Bark is chiefly confined to the pale and red kind; and the nearer the former resembles the latter, the more it is esteemed.

“ The Peruvian Bark yields its virtues both to cold and boiling water; but the decoction is thicker, gives out its taste more readily, and forms an ink with a chalybeate more suddenly than the fresh cold infusion. This infusion, however, contains at least as much extractive matter, but more in a state of solution; and its colour on standing with the chalybeate becomes darker, while that of the decoction becomes more faint. When they are of a certain age, the addition of a chalybeate renders them green; and when this is the case, they are found to be in a state of fermentation, and effete. Mild or caustic alkalies, or lime, precipitate the extractive matter, which in the case of the caustic alkali is re-dissolved by a farther addition of the alkali. Lime-water precipitates less from a fresh infusion than from a fresh decoction; and in the precipitate of this last some mild earth is perceptible. The infusion is by age reduced to the same state with the fresh decoction, and then they deposit nearly an equal quantity of mild earth and extractive matter; so that lime-water as well as chalybeate may be used as a test of the relative strength and perishable nature of the different preparations, and of different Barks. Accordingly, cold infusions are found by experiments to be less perishable than decoctions; infusions and decoctions of the red Bark, than those of the pale: those of the red Bark, however, are found by length  
of



of time to separate more mild earth with the lime-water, and more extracted matter. Lime-water as precipitating the extracted matter appears an equally improper and disagreeable menstruum. Water has been found to suspend the resin by means of much less gum than has been supposed. Rectified spirit of wine extracts a bitterness, but no astringency, from a residuum of twenty affusions of cold water; and water extracts astringency, but no bitterness, from the residuum of as many affusions of rectified spirit. The residua of both are insipid\*.”

From many ingenious experiments made on the Peruvian Bark by Dr. Irving, published in a Dissertation which gained the prize-medal given by the Harveian Society of Edinburgh in 1783, the power of different menstrua upon Peruvian Bark is ascertained with greater accuracy than had before been done: and it appears, that, with respect to comparative power, the following fluids act in the order in which they are placed: Dulcified spirit of vitriol: Caustic lye: French brandy: Rhenish wine: Soft water: Vinegar and water: Dulcified spirit of nitre: Mild volatile alkali: Rectified spirit of wine: Mild vegetable alkali: Lime-water. The antiseptic powers of vinegar and Bark united are double their sum taken separately. The astringent power of the Bark is increased by acid of vitriol; the bitter taste is destroyed by it.

\* Ed. New Dispens. p. 251.

Though the Bark on its first introduction, and even some time afterwards, was reprobated by some eminent physicians as a dangerous remedy ; yet these prejudices are entirely done away, and its character is now universally established : so that the disputes which at present subsist are confined to its mode of operation, or the manner in which it is most efficaciously administered. To detail these, however, or even to give a circumstantial relation of the various states of disease in which the Bark might be advantageously employed, would far exceed our limits : we are therefore confined to state briefly those diseases to which this medicine is more especially adapted.

The Bark first acquired its reputation for the cure of intermittent fevers, and in these, when properly exhibited, it rarely fails of success. For this purpose, some practitioners prefer giving it just before the fit, some during the fit, and others immediately after. Dr. Cullen, who is of the first opinion, says, " I am satisfied that giving a large dose of the Bark immediately before the time of accession, is the most proper practice : but as that dose must not be under two drams of pale Bark, so there are some stomachs which will not bear even that quantity, or a larger that might be necessary. It is commonly, therefore, convenient to give small doses, but to give them every hour for some hours near to the times of accession\*."

\* Mat. Med. vol. p. 97.



Some again order it in the quantity of an ounce between the fits; the dose being more frequent and larger, according to the frequency of the fits; and this mode of procedure, although it may perhaps lead to the employment of more Bark than is necessary, is considered by Dr. Duncan\* as upon the whole preferable, from being best suited to most stomachs. When the Bark pukes, or purges, or oppresses the stomach, it is to be counteracted by remedies particularly appropriated to them. Thus, vomiting is often restrained by exhibiting it in wine; looseness, by combining it with opium; and oppression at the stomach, by the addition of an aromatic. But unless for obviating particular occurrences, it is more successful when exhibited in its simple state than with any addition.

It may be given from the very commencement of the disease without any previous evacuations, though it commonly answers better after emptying the alimentary canal, particularly the stomach; and it is to be continued not only till the paroxysms cease, but till the natural appetite, strength, and complection return.

In remittent fevers, especially during the times of remission, the Bark may also be employed with great success; for as both these and intermittents arise from the

\* See New Edinburgh Dispensatory.

same cause, prevail at the same seasons, and assume mutually the form of each other, they show a strict affinity, and found a presumption which is confirmed by experience, that they may be cured by the same remedy. In continued fevers, or typhus of the nervous and putrid kind, the Bark is very generally used, as well suited to counteract the debility or putrescency which marks the progress of the disorder. There is, however, one state not unfrequently present in these epidemic fevers, in which the Bark is found to be hurtful; i. e. symptoms of congestion, or topical inflammation of the head, manifested by headach, redness of the eyes, and phrenitic delirium. And whenever delirium is accompanied with much subsultus tendinum, or frequent convulsive twitchings of the limbs, Dr. Cullen thinks opium in large doses is the only remedy to which we can trust.

Of late the Bark has been much employed in acute rheumatism, particularly after the violence of the disease has been in some measure moderated by the antiphlogistic treatment, or when evident remissions take place. Many, however, have recourse to this medicine in the first stage of the disease, and we have witnessed its success in some of the London Hospitals, even while the inflammatory symptoms prevailed to a very considerable degree. This seems contrary to the experience of Dr. Cullen, who says, "As I consider this disease as especially

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consisting



consisting in a phlogistic diathesis, I hold the Bark to be absolutely improper, and have found it manifestly hurtful, especially in its beginning, and in its truly inflammatory state."

In the confluent small-pox the Bark has been recommended to promote the rising of the pustules. This opinion our own experience teaches us to reject; but after the maturation of the pustules is completed, or where symptoms of putrescency, or a dissolved state of the blood, supervenes, the Bark cannot be too liberally employed. The other diseases in which the Bark is recommended, are gangrenous sore throats, and indeed every species of gangrene; scarletina, dysentery, all hemorrhages of the passive kind; likewise other increased discharges; some cases of dropsy, especially when unattended with any particular local affection, scrophula, ill-conditioned ulcers, rickets, scurvy, states of convalescence, certain stages of phthisis pulmonalis, &c.

The officinal preparations of the Bark are the powder, the extract, the tincture, and the decoction. This last, though frequently employed, is in many respects inferior even to a simple watery infusion; but the best form is that of powder, in which the constituent parts are in the most effectual proportion.

The virtues of *Cinchona Macrocarpa*, a new species, have been lately described by Dr. James Clarke in his Treatise on the Yellow Fever, where a comparative table of the quantity of soluble or extractive matter obtained from the different species of Bark by water and spirit is exhibited.

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HYÆ.



HYÆNANCHE GLOBOSA, PL. 10.

HYÆNA POISON.

DIÆCIA POLYANDRIA.

Syn. Iatropa globosa Gærtn. vol. 2. p. 122. t. 109.

Croton foliis crassis, venosis, venis rubentibus,  
Burm. Afric. p. 122. t. 45.

Arbor parva, sex aut septem pedes alta, ramis diffusis.

Cortex cinereo-fuscus, rugosus, articulatus, cicatricibus  
ad articulos notatus quo petiola foliorum antea exti-  
terant.

Folia verticillata, terna vel sæpius quaterna, petiolo  
brevis canaliculato, ovato-oblonga, emarginata, integer-  
rima, lævigata, nervoso-reticulata, revoluta.

*Feminei* flores in axillis foliorum pedunculis multiflo-  
ris brevibus.

Calyx squamosus, imbricatus, squamulis ovato-acumi-  
natis apice scariosis, deciduis.

Corolla





Fred Bauer del.

*Hybanthus globosa.*

J. Barlow sculp.





Corolla nulla.

Pericarpium capsula corticata, fuberosa, quadricocca, coccis lignosis bivalvibus dispermis.

Styli 2 aut 4.

Stigmata quatuor reflexa, glandulosa, fimbriata.

Semina duo in unaquaque cocca, ovata, compressa, glabra, umbilico fuberoso.

*Masculi* flores in axillis foliorum racemis congestis numerosis subsessiles.

Calyx polyphyllus, foliolis ovatis, concavis coloratis (Calyculatus squamis ad basin foliorum?).

Corolla nulla.

Filamenta numerosa brevia: Antheræ subrotundæ didymæ.

This shrub grows about two hundred miles from the Cape, in a rocky soil, on a single spot, on Wind-Hook Mountains, near Elephants' River.

A farmer lives there, who collects the fruit, by which



he makes a profit of about 20 l. per annum, by felling it for the purpose of poisoning hyænas. The fruit is pounded into a powder, and administered in the same manner as the Nux Vomica. The powder is put into the carcases of lambs, &c. which are laid where the hyænas are known to come. By eating the flesh they are infallibly destroyed.

This plant flowers and bears fruit annually in the stove of the Right Honourable the Earl of Tankerville, at Walton, the only place it has yet flowered at in this country; and I believe it is in no other collection in England except at Kew. Our figure of the female was drawn from the plant in his Lordship's stove in 1795; the male from a specimen very obligingly communicated to me by Mr. F. Maffon.

F I N I S.

ORDER OF THE PLATES.

- Plate 1. *Cinchona officinalis*.  
2. *Cinchona pubescens*.  
3. *Cinchona macrocarpa*.  
4. *Cinchona caribæa*.—This plate is from a specimen in the Herbarium of Hen. de Ponthieu, Esq. now in my possession.  
5. *Cinchona corymbifera*.—From specimens and drawings in the Herbarium of Sir Joseph Banks.  
6. *Cinchona lineata*.  
7. *Cinchona floribunda*.—From a specimen in the Herbarium of Sir Joseph Banks; found by Mr. Fran. Maffon in St. Lucie.  
8. *Cinchona brachycarpa*.—From a specimen in the Herbarium of Sir Joseph Banks.  
9. *Cinchona angustifolia*.  
10. *Hyænanche globosa*.  
11. Leaves of Tecamez Bark.  
12. *Cinchona longiflora*.  
13. *Cinchona spinosa*.



INDEX OF SUBJECTS

- 1. General Principles
- 2. The Nature of the Subject
- 3. The Scope of the Subject
- 4. The History of the Subject
- 5. The Present State of the Subject
- 6. The Future of the Subject
- 7. The Importance of the Subject
- 8. The Methods of the Subject
- 9. The Results of the Subject
- 10. The Conclusions of the Subject











