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FUNDAMENTAL ERRORS IN THE EARLY HISTORY OF CINCHONA

BY
A. W. HAGGIS

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FUNDAMENTAL ERRORS IN THE EARLY HISTORY OF CINCHONA

A. W. HAGGIS

*The Wellcome Historical Medical Museum, London;
Fellow of The Linnean Society.*

PART I

INTRODUCTION

No remedial plant in all the botanical world has been the subject of more controversy than the genus *Cinchona*. Almost from the very moment of its discovery and introduction into Europe the wordy warfare began and by the commencement of the second half of the seventeenth century *Cinchona* was the subject of the hectic dispute waged by Honoratus Faber¹ against Chifflet,² Plempius³ against Faber, Bado⁴ and Sturm⁵ against Chifflet and Plempius, with Brunacio⁶ and numerous others joining in the conflict.

¹ Conigius, Antimius (Honoratus Faber), *Pulvis Peruvianus febrifugus vindicatus*. Rome, 1655.

² Chifflet, J. J., *Pulvis Febrifugus orbis Americani*. . . . Louvain, 1653.

³ Plempius, V. F., *Peruviana corticis defensor (A. Conigius) repulsus a Protimo Belga*. Louvain, 1655.

⁴ Bado, S., *Cortex Peruviae redivivus, Profligator Februm, assertus ab impugnationibus Melippi Protimi*: Genoa, 1656; and *Anastasis Corticis Peruviae seu Chinae Chinae defensio S. B.* . . . Genoa, 1663.

⁵ Sturm, R., *Febrifugi peruviani vindiciarum, Pars prior* . . . Antwerp, 1659.

⁶ Brunacio, G., *De Cina Cina seu Pulvere ad Febres syntagma Physiologicum*. Venice, 1661.



CINCHONA OFFICINALIS, LINN.

Sturn, however, as the learned and impartial champion of the remedy, in 1659, submitted the works of both Chifflet and Faber to a most searching and critical analysis. His scathing denunciation of those physicians who with prejudiced minds decried the bark, his rejection of all fanciful theories in favour of practical demonstrations, his condemnation of the bigotry of dogmatic physicians whose attacks upon the remedy were based on inadequate experience, form one of the most brilliant and logical dissertations in medical history.

No sooner had the conflict seemed likely to wane and cease than it burst out with renewed vigour, England taking a prominent part in the dispute. The popularity and preferment of the empiric Sir Robert Talbor incensed many of the medical profession, and his successful use of Cinchona gave rise to outbursts of jealousy. The bitterest and most vitriolic of his assailants was Gideon Harvey whose scurrilous diatribe against physicians in general contained a specially violent attack upon Talbor and his methods.⁷ Talbor, notwithstanding the antagonism of his contemporaries, happened however to have devised the improved practice of administering the remedy in larger and more frequent doses, a beneficial method not previously appreciated.

Meantime other physicians of a somewhat less bigoted mentality than Harvey, took part in the dispute, some of whom like Willis and Morton, after appearing as opponents of Cinchona were converted to its use. It was mainly from the iatro-chemical and Galenic schools that the opposition came. On the continent one of the most powerful of the anti-cinchonologists was the Italian, Bernardino Ramazzini,⁸ whose incisive criticism was, however, directed more against the unintelligent use of Cinchona than against the remedy itself. He in turn was severely attacked by his fellow countryman Zendrini.⁹ Faith in the efficacy of the remedy was, however, steadily on the increase, and converts to its use included such prominent Galenists as Jacques Minot, Casper Bravo de Sobremonte, Ramirez, physician to the Spanish court, and Andriolli.

⁷ Harvey, Gideon, *The Conclave of Physicians, detecting their intrigues . . . with a Discourse on the Jesuits' Bark*. London, 1683.

⁸ Ramazzini, B., *De usu et abusu Corticis Peruvianæ*; 1714.

⁹ Zendrini, B., *Trattato della China China*. Venice, 1715.

For nearly a century the dispute had flourished; but it was almost entirely confined to the therapeutic efficacy of the drug. By the end of the first quarter of the eighteenth century the conflict regarding its medicinal value was practically ended, and its place in *materia medica* established.

One of the most striking characteristics of the whole of the voluminous literature of this dispute, is the profound ignorance of protagonists as well as opponents concerning the real identity and botanical features of the plant about which they wrangled.

Before the expedition of La Condamine and Joseph de Jussieu in 1735, descriptions of the genus were contradictory, inaccurate even concerning fundamental characteristics, and therefore most unreliable. As a result of the labours of these two pioneers, and the missions of Arrot, Ulloa and Santisteban, the botanical world began to learn something regarding the characteristics and habitat of *Cinchona*, as well as the fact that a number of different species of the genus flourished.

Midway through the second half of the eighteenth century the scientific world was once again in the throes of controversial warfare regarding *Cinchona*, and there followed what was perhaps the bitterest of all disputes connected with the genus—the lengthy and acrimonious conflict between José Celestino Mutis and Ruiz and Pavon, concerning the discovery and identification of various species, and the comparative therapeutic values of the different kinds of bark. This dispute was ended only by the death of Mutis (1808). Nevertheless the contest between these distinguished Spanish antagonists was by no means detrimental to the advance of knowledge concerning *Cinchona*. It stimulated the zeal for botanical investigation and led to an era of pioneer work such as was accomplished by the brilliant expeditions of Humboldt and Bonpland (1799), Weddell (1843), Spruce (1849), Markham (1852) and others of the nineteenth century.

With such an almost uninterrupted course of controversy pervading the history of *Cinchona* it is not surprising that its literature is hard to assimilate on account of the prevalence of error, and distortion of facts. The elucidation of several important phases of the early history of this genus is the purpose of this essay.

Before the days of Linnaeus, who first named the genus *Cinchona* in 1742,¹⁰ the plant was frequently known to Europeans as *Quina-Quina*, which term from the time of Sebastiano Bado's second work¹¹ in 1663, has been accepted as the indigenous name by which the *Cinchona* tree was known to the Indians. It will however be shown in the following pages that the *Cinchona* tree was never called *Quina-Quina* by the Quichuan people. To them that name belonged only to the Peruvian balsam tree (*Myroxylon peruiferum*, Lin. fil.).¹²

The error thus committed by Bado, although he was merely recording a common belief encouraged by those responsible for the importation of the two remedies, and repeated by innumerable cinchonologists since, has resulted in the early history of two distinct remedies having become almost hopelessly entangled.

The intensity with which the early protagonists disputed, and the hopeless irreconcilability of their widely divergent views, are matters for little surprise if the fact be remembered that some who described their experiences of *Cinchona* met with vituperative contradiction from others whose argument was based upon knowledge and use of the bark of Peruvian balsam, yet both sides innocently believed themselves to be in dispute concerning one and the same remedy.

An endeavour will be made to show (1) the true origin and meaning of the name *Quina-Quina*, (2) how it became erroneously applied to the genus *Cinchona*, (3) the widespread effects of this mistake upon the historical literature of the subject, and (4) that the romantic story of the cure of the Countess of Cinchon and certain other events associated with the discovery of *Cinchona* and its introduction into Europe are no more than fables.

§ 1. ETYMOLOGY OF THE NAME QUINA-QUINA

The earliest endeavour to explain the derivation of the term *Quina-Quina*¹³ was made by the French savant La Condamine,

¹⁰ Linnaeus, C., *Genera Plantarum*; 2nd Edition, 1742, p. 527.

¹¹ Bado, S., *Anastasis Corticis Peruviae seu Chinae Chinae defensio* S. B. . . . Genoa, 1663.

¹² For proof of this assertion *vide infra* § 2.

¹³ Throughout this investigation the essential fact must be borne in mind that the Quichuan name *Quina-Quina*, before ever it was applied to the genus *Cinchona*, belonged to the Peruvian Balsam tree (*Myroxylon peruiferum*, Lin. fil.). Proof of this fact will be furnished in Section 2.

following his visit to Peru in 1735-38. La Condamine, in his essay *Sur l'Arbre du Quinquina*,¹⁴ regards it as an unquestionable fact, which cannot be contested, that the term *Quina-Quina* is derived from the language of the Quichuan Indians of ancient Peru.

La Condamine says:

In an old dictionary of the Quichoa language . . . printed at Lima in 1614, occurs the word—*Quina ai* which is obsolete at the present day . . . This word is translated in the dictionary by the Spanish—*Mantelilla India*, a kind of mantle or cape with which the natives used to cover themselves. As the Quichoa language is very poor in expressions, to remedy this poverty it has few words whose meaning cannot be stretched by metaphor to various others: one may assume with sufficient certainty that *Quina ai* which ordinarily meant a cloak, might also mean *bark*, when applied to the question of a tree, or at least to have had this meaning formerly. I disregard the small difference in the ending, so usual in words which pass from one tongue to another . . .¹⁵

It is fortunate that La Condamine gives the source of his information, and also that in the British Museum is preserved not only a copy of the rare Quichuan-Spanish vocabulary¹⁶ of 1614, which he refers to, but also an earlier edition¹⁷ printed in 1604 which enables a double check to be made upon La Condamine's explanation.

In the first place a careful examination of both these volumes shows that neither of them contains the words *Quina* or *Quina-Quina*, nor do they actually give the word *Quina ai* from which La Condamine says the name *Quinaquina* was derived. But they do both contain the compound word *Quinaay-lliella*¹⁸ the Spanish meaning of which is given as *Mantellina de India* (= small Indian mantle or shawl). Allowing for the fact that "y" and "i" were often interchangeable at that period it becomes clear that this is the

¹⁴ La Condamine, C. M. de, *Sur l'Arbre du Quinquina. Mémoires de l'Académie Royale des Sciences*. Paris, 1738.

¹⁵ For original text *vide* Appendix (a).

¹⁶ *Arte y Vocabulario en la lengua general del Peru llamada Quichua y en la lengua Española*. . . . Lima, 1614.

¹⁷ *Vocabulario en la Lengua general del Peru llamada Quichua, y en la lengua Española. Nuevamente emendado y añadido de algunas cosas que faltaban por el Padre maestro Fray Juan Martínez, etc.* . . . Lima, 1604.

¹⁸ Actually the 1604 edition gives *Quinray-lliella* but the alphabetical order in which the word is placed, and a comparison with the 1614 edition, apart from the meaning given, proves this to be a typographical error for *Quinaay-lliella*.

source of La Condamine's reference. To derive the name *Quina*, however, he unwarrantably bisects the compound word *Quinaay-lliclla*, omits the last two letters from the first half, and having by such unpardonable methods of etymological deduction produced the word *Quina* he then gives to it the meaning of the complete compound word *Quinaay-lliclla*. Even then he is only able to apply its meaning to a tree by a very elastic use of metaphor.

From his own source La Condamine is thereby shown to be fundamentally wrong in saying that "*Quina* ai . . . ordinarily meant a cloak." According to the vocabularies themselves it means nothing of the kind. It is the added word *lliclla* which gives that signification, for in the original works the word *lliclla* is given by itself, and translated as *Manta de India, la que cubre la saya* (= Indian mantle which covers the skirt).

Even so such illogical reasoning enables La Condamine only to produce the single word *Quina* which, although loosely used in European cinchonology, is not the original indigenous term *Quina-Quina*. On La Condamine's own showing, it is the duplicated use of the word which indicated its significance as the name of a medical remedy, as with many other Quichuan plant-names such as *Pulla-pulla*, a remedy for abscesses and tumours, *Chaucha-chaucha* for swollen livers or wombs, *Pinco-pinco* for many disorders including dysentery, haematuria, etc.¹⁹

The erroneous derivation offered by La Condamine having been exposed the question naturally arises, do these vocabularies contain the true Quichuan name for the Peruvian balsam tree (*Myroxylon peruiferum*, Lin. fil.)? As it is a fact that they do not include the name *Quina-Quina* (spelt thus) one is naturally induced to look for the name in some slightly varied form, for it seems unlikely, in a work specially compiled for missionaries and government officials, that so important a name should be omitted. Its contemporary importance may be appreciated from the fact that this tree was the source of the Holy Chrism then used by the Church in South America.²⁰

¹⁹ Cobo, Bernabe, *Historia del Nuevo Mundo*. MSS. written from 1596-1653.

²⁰ In 1571 Pius V granted a Faculty permitting its use in the New World in place of the oriental balsam *Balsamodendron gilcadense*, Kth.

It is important to remember that in the literature of those days, before the adoption of standardized orthography, one must be prepared for slight variations of spelling, especially in early attempts to record a language such as Quichuan, which had previously known no written form. In fact slight differences in the spelling of indigenous Quichuan names appear to have been more the rule than the exception amongst the botanists of Europe. Even the term *Quina-Quina* itself is variously encountered as *Quinaquina*, *Quino-Quino*, *Quinquino* in the writings of Spanish authorities. Also Ruiz in his account of *Quinua* (*Polylopsis*) gives two orthographical variations, viz. *Quinuar* and *Quinhuar*.

A Quichuan compound word orthographically similar to *Quina-Quina* with a meaning applicable to the characteristics of the Peruvian balsam tree is given in both editions of the Quichuan vocabulary; it is *Quinua-Quinua*, and its meaning is given as "Cierta legumbre"²¹ llamada assi" (= A certain leguminous plant thus called). Not only is *Quinua-Quinua* much closer orthographically to *Quina-Quina* than La Condamine's imaginative derivation from *Quinaay-lliclla*, but *Quinua-Quinua* expresses two of the most significant characteristics of *Quina-Quina* (*Myroxylon peruiferum* Lin. fil.). Its duplicated form suggests its medicinal character whilst the Spanish translation indicates that it describes a plant of a leguminous order. Its very close orthographical similarity, and its exact application of meaning are powerful reasons for regarding *Quinua-Quinua* as the original form of *Quina-Quina* which was the indigenous name of the Peruvian balsam tree.

The duplicated form of the term *Quinua-Quinua*, indicating the medical character of the plant, cannot be too clearly emphasized, for the name *Quinua*, used singly, also occurs in early Spanish botanical literature as the name of two other plants which have no relation to each other nor with the Peruvian balsam tree. It occurs several times in "*Confessorio para los Curas de Indos*," published in Lima as early as 1585, a work issued as a guide for priests in the con-

²¹ It is important to bear in mind that the word *legumbre* (singular) in Castilian Spanish, the language of the educated Spaniard of the period, possessed only one meaning viz. "a pulse-yielding or leguminous plant." Only in colloquial Spanish is the plural *legumbres* used to mean "edible vegetables" or "greens."

version of the natives to Christianity,²² and considered in its context amongst other agricultural foods, the term *Quinua* clearly refers to the *Quinua* (or *Quinoa*) found on the slopes of the Andes, which is cultivated in Peru and Chile for its edible farinaceous seeds.²³ This plant is also fully described in the early 17th century manuscript work of the Jesuit Bernabe Cobo.²⁴ But Cobo in addition gives description of an entirely different plant bearing the name *Quinua*,²⁵ which may be unquestionably identified as the *Polylepis*²⁶ of Ruiz. His description may also be cited as a further example of orthographical variation in Quichuan-Spanish botanical names:—

Leaving behind various metal mines and lakes, we descended into the Valley of *Quinua*, a name derived from the tree called *Quinnar*, or according to another pronounciation *Quinhuar*, which abounds there and is used not a little by the miners of the highlands of Yauricocha for buildings and mines, and for firing, on account of its strong and durable wood. From this tree we established the genus *Polylepis*, a name derived from its habit of discarding its bark in a number of thin laminae like velum or honey-coloured paper.²⁷

Thus we get in addition to *Quinua-Quinua* two other plants named *Quinua*, one of which has three different forms of spelling.

Returning to consideration of the Peruvian balsam tree, Molonado and Esporto, the Peruvian scientists, in their *Contribución al Estudio de la Materia Médica peruana* (Lima 1919), state that at one time the genus *Myroxylon* was called *Quino-Quino*, the bark was known as *Quina-Quina* bark, and the fruit or seed simply as *Quina-Quina*. They also point out that the genus *Myroxylon* has been, by various botanists, called *Quino-Quino* (by Ruiz, Raimondi, Colunga, Barranca, Dominques, etc.) and *Quina-Quinas* (by Cosme Bueno), variations which are merely orthographical.

²² For original Spanish text *vide* Appendix (b).

²³ *Oxford New English Dictionary*: sub. *Quinoa*.

²⁴ Cobo, Bernabe, *Historia del Nuevo Mundo*, MSS. written from 1596 to 1653.

²⁵ For original Spanish text *vide* Appendix (c).

²⁶ *Polylepis* Ruiz et Pav. Nat. Ord. Rosaceae (Bentham & Hooker—*Genera Plantarum*).

²⁷ Ruiz, Don Hipólito, *Relación del viaje hecho a los Reynos del Perú y Chile* . . . ed. by R. P. A. J. Barreiro, 1931. p. 93. For original Spanish text *vide* Appendix (d).

Ruiz says in one of his pamphlets:—

The natives of the country call the tree by the name of *Quinquino*, and its bark and fruit by that of *Quinquina*; others call the tree *Quinquina*, but it is more commonly called by the name of *Quinquino*.

This *Quinquino* of Ruiz has been definitely identified by Lambert as *Myroxylon peruiferum*, Lin. fil.²⁸

It seems therefore, in view of the fact that orthographical variation was in common practice in the seventeenth century, that the term *Quinua-Quinua* meaning as it does "a certain leguminous plant, thus called" may very probably have been the original Quichuan name for the Peruvian balsam tree (*Myroxylon peruiferum*, Lin. fil.) which afterwards became known to Europeans as *Quina-Quina*. Certainly it is a more logical deduction than that offered by La Condamine. That the name *Quina-Quina* did in the first place properly belong to the Peruvian balsam tree, and not to *Cinchona* will be shown in the section which follows.

CONCLUSIONS

1. That La Condamine's contention that the name *Quina-Quina* was derived from the Quichuan term *Quina ai* is proved wrong by the authority he himself quotes.
2. That the Quichuan term *Quinua-Quinua*, which unquestionably meant "a leguminous tree" possessing medicinal virtues, is the closest approximation in the earliest Quichua-Spanish vocabularies to the term *Quina-Quina*.
3. That the only Peruvian medicinal tree possessing a name similar to *Quinua-Quinua*, definitely leguminous and known to the Spaniards at the time of the Quichua-Spanish vocabularies (1604) was that which yielded Peruvian balsam, and therefore was no doubt the species known as *Myroxylon peruiferum*, Lin. fil.
4. That the term *Quina-Quina* is synonymous with *Quinua-Quinua* and is derived from it.

²⁸ Lambert, A. B., *Illustration of the Genus Cinchona*, 1821.

§ 2. THE ORIGIN OF THE CONFUSION BETWEEN PERUVIAN BALSAM AND CINCHONA

Amongst the numerous discoveries of remedial plants that followed the Spanish conquest of America was the genus *Myroxylon*, known in European materia medica under the name of the Peruvian Balsam tree.

Although for a considerable period it achieved a wide popularity as a remedy for various ailments, and notwithstanding its use as the Holy Chrism of the Church in America, early literature upon Peruvian Balsam is scanty. Monardes of Seville in 1565 referred to it when he wrote concerning the medicinal properties of Balsam,²⁹ and its appearance in Europe is recorded in a list of merchandise of the city of Worms dated 1609.³⁰

Authorities agree that this balsamic tree was known to the natives of Peru by the name *Quina-Quina*,³¹ that it possessed remedial virtues and that its bark was collected by the Jesuits of La Paz for transport to Rome where, at the dawn of the 17th Century, it was distributed as a febrifuge³² under its indigenous name.

Yet notwithstanding the fact that *Quina-Quina* was originally the indigenous name for Peruvian Balsam, for close upon three centuries the name has been so inseparably associated with the genus *Cinchona*, that it has become almost a rule to regard all references to *Quina-Quina* as appertaining to *Cinchona*. This has led to such an abundant confusion of error and truth that the history of *Cinchona* as it stands to-day has become baffling for even the ablest of investigators.

So deeply rooted is this confusion, even in modern cinchonology, that when, in 1931, an early seventeenth century manuscript³³ by the Carmelite Fray Vasquez de Espinosa (who lived in Peru from 1615-1628) was discovered, his description of *Quina-Quina* was

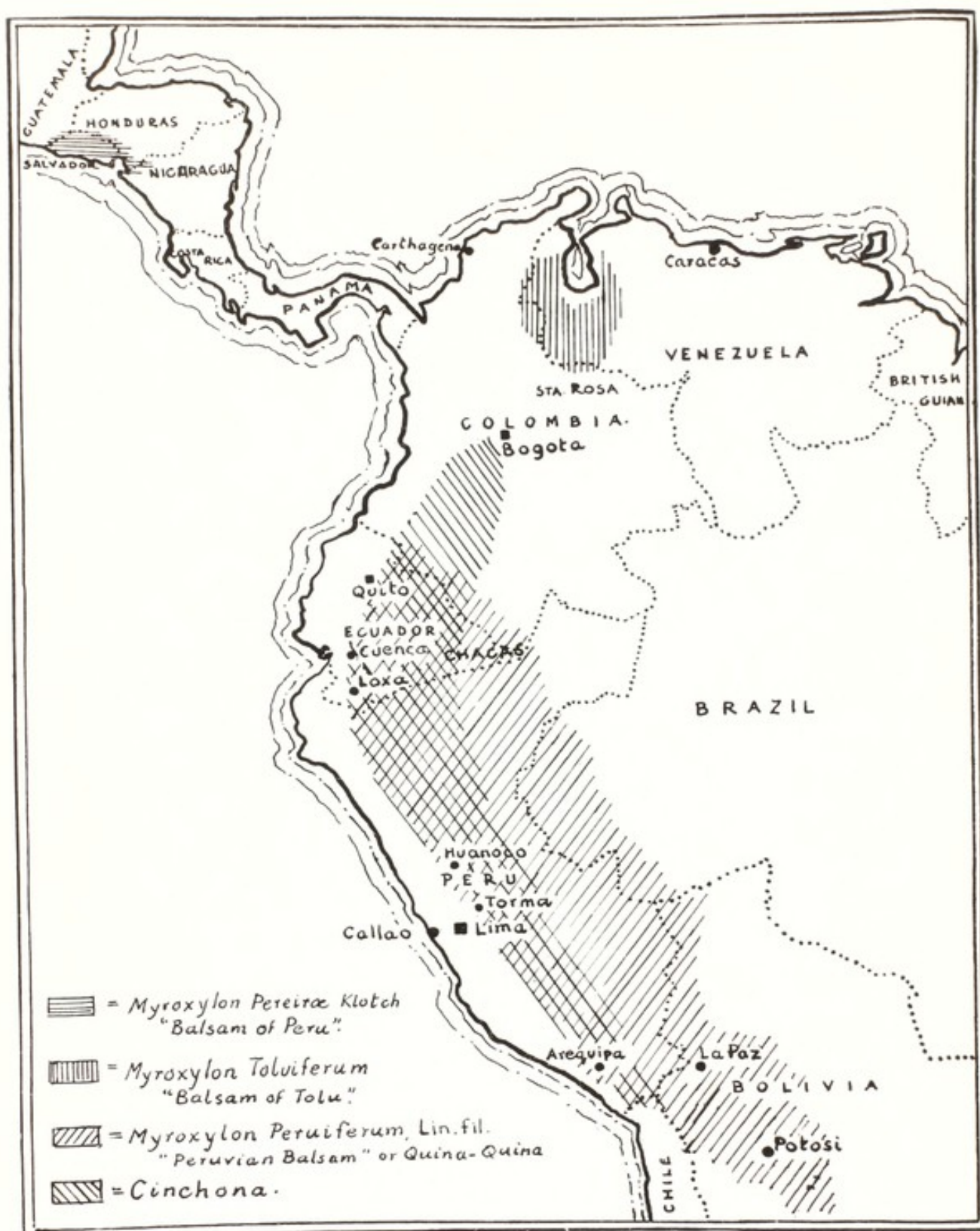
²⁹ Monardes, N., *Historia medicinal de las cosas que se Traen de nuestras Indias Occidentales*, 1565.

³⁰ Flückiger and Hanbury, *Pharmacographia*, 1879. P. 202.

³¹ Vide the descriptions of Espinosa and Cobo of this tree, *infra*.

³² La Condamine, C. M. de, *Mémoires de l'Académie Royale des Sciences*, 1738; Rosen, E., *Dissertation on Cinchona*, 1744.

³³ Espinosa, Fr. Antonio Vasquez de, *Compendio y Descripción de las Indias Occidentales*. (Before 1628): Bibl. Vatican. Barberini Colln. 3584.



MAP SHOWING THE HABITATS OF MYROXYLON AND CINCHONA described in the works of Espinosa and Cobo in the early XVIIth century.

immediately hailed as the earliest record of Cinchona,³⁴ although, as will be clearly seen, it was unquestionably a description of Peruvian balsam (*Myroxylon peruiferum*, Lin. fil.). An extract from Espinosa's description of *Quina-Quina* says:—

The quinaquina tree also bears pods like beans . . .

From the quinaquina tree they extract a liver-coloured resin, very fragrant and healthful, and with its fumes, cure chills and colds in the head; with this resin mixed with oil they cure wounds and sores, and the oil which they extract from its seeds has the same effect, and is more efficacious. The quinaquina tree is very beautiful, and its wood very fragrant and strong; the colour of the wood is white and tawny veined.³⁵

In another part of the same manuscript Espinosa also states that the district in which the tree flourishes corresponds to the region of CHACAS or CHARCHAS, and he adds, with reference to the wood from the tree, that from it joists and beams for the mines of POTOSI are made.

Brief though Espinosa's description is, it clearly refers to Peruvian Balsam (*Myroxylon peruiferum*, Lin. fil.) for the tree "bears pods like beans," it yields "a liver-coloured resin," and from its seeds a medicinal oil is extracted. These are the main features of the Peruvian Balsam tree and correspond to the Spanish interpretation of the Quichuan name Quinua-Quinua. Such characteristics show that Espinosa's description of *Quina-Quina* has no connection with the Cinchona tree.

Confirmation of this description is forthcoming from the chronicles of the Jesuit Bernabe Cobo who, having lived in Peru and Mexico from 1596-1653, was Espinosa's contemporary. That no doubt whatever existed in the minds of these early chroniclers concerning the identity of *Quina-Quina* is clearly demonstrated when comparison is made between their respective accounts.

Cobo, the significance of whose magnificent work³⁶ has been generally unrecognized, gives three descriptions of importance to the subject of this enquiry. They are:—

³⁴ *New York Times*, 20th September, 1931, under the heading "Wrote about Quinine (*sic.*) in 1628."

³⁵ For original Spanish text *vide* Appendix (c).

³⁶ Cobo, Bernabe, *Historia del Nuevo Mundo* (completed 7th July, 1653).

- (a) DE LA QUINA QUINA
- (b) DEL BALSAMO
- (c) DEL ARBOL DE CALENTURAS

Cobo's account of the *Quina-Quina* tree, which is more detailed than Espinosa's, is as follows:—

QUINA-QUINA

Quina-Quina is, in Peru, the name of a large and beautiful tree, resembling a medium sized olive. The leaf is of the size and shape of that of the lemon, the trunk is reddish, resinous and aromatic. The tree is calid in the second degree, styptic, dry and with a soft smell. *It reproduces by almond-sized seeds, yellowish in colour and oleaginous in consistency, with a pleasant smell; they too are calid and styptic in the second degree, but dryer than the first mentioned. Scarified, the trunk and branches exude a fragrant gum, which soon congeals and may be ground to a dark grey powder. This is calid and dryer than the seeds.*

This tree grows in the hot land of CHARCAS, in Peru. If the teeth are cleaned in the ordinary way with the bark, it tightens and soothes them. Shavings from the wood made into a decoction with Polipodium, senna and anise, taken a few mornings fasting, clears the liver, spleen and stomach, and cleanses the bladder. Pounded leaves applied to fresh wounds, closes and dries them and with salt water, leaves of *chilca* and *molle* in a decoction, they take away the inflammation of gouty legs.

In POTOSI a marvellous oil is made from the seeds of this tree in the following way:—

Pound 4 oz. of the seeds and add them to a quarter of a pint of old wine, leave it for two hours, then mix with it 2½ lbs. of oil. Cook on a slow fire until the wine evaporates. Take off the fire and when cold filter it and return to the pot, add one pound of turpentine and bring it to the boil once. Withdraw from the fire and add well-ground incense and myrrh, 1½ oz. of each, and mix thoroughly until they blend. Cover the vessel and keep. Its effects are marvellous.

Inhaling the fumes of the burning seeds or resin dispels headaches. The seeds roasted and drunk with wine are good for pains in the side and wind, and pounded and mixed with resinous powder, boiled in wine, with a little resin from the *Molle*, and a small quantity of incense and filtered honey, makes an excellent decoction which is beneficial in the case of deep festering wounds, cleaning and drying them gently.

The resin finely ground and boiled with ordinary oil or hog's lard or butter, heals fresh wounds; and the powder applied to the wound absorbs all the moisture and dries it.³⁷

³⁷ For original Spanish text *vide* Appendix (f).



MYROXYLON PERUIFERUM, Linn. fil.

It will be advantageous at this point to summarise the main features of the descriptions of Espinosa and Cobo and compare them with a modern description of the genus *Myroxylon*.

1. *Espinosa's "Quina-Quina"*

- (a) It bears *pods like beans*.
- (b) It yields a *liver-coloured resin*.
- (c) *From its seeds an efficacious medicinal oil is extracted*.
- (d) *Its wood is fragrant and strong*.
- (e) *It flourishes in the region of CHACAS (or CHARCHAS)*.

2. *Cobo's "Quina-Quina"*

- (a) Seeds are *almond-sized*.
- (b) Scarified, *the trunk yields a fragrant resin*.
- (c) *A marvellous oil is made from the seeds*.
- (d) The trunk is *reddish, resinous and aromatic*.
- (e) It grows in the *hot lands of CHARCAS in Peru*.
- (f) IN POTOSI³⁸ the above-mentioned oil is made.

3. *General Characteristics of the Genus Myroxylon compiled from Modern Authorities.*

The genus *Myroxylon* grows in Central and South America. The tree attains a height of from 40 to 80 feet. The *leaflets* are elliptical or ovate, with an attenuated point. The *flowers* are numerous, white or whitish, and grow in terminal clusters. The *pod* is scythe-shaped, from 3 to 5 inches in length, with a one-seeded cavity at its extremity, in which are two large reservoirs filled with liquid resin. The *seed* is kidney-shaped.

Balsam is obtained by bruising or scarifying the trunk, sometimes by incisions, the exuding balsam being absorbed with cloths. The balsam is a viscid liquid, about the consistency of treacle, *reddish-brown in colour*, and with an *agreeable odour*. It has a warm and *bitterish flavour*. When solid it may be ground to powder. It is *used medicinally*, but its virtues were originally much more highly esteemed than in modern *materia medica*.

Myroxylon, however, is not restricted to a single species. *M. peruvianum* Lin. fil., is undoubtedly the species described by Espinosa and Cobo as *Quina-Quina*, and is the true Balsam which grew in Peru "in the hot lands of Charcas." The balsam obtained from this tree was originally considered to have been the most efficacious, but owing to this species being comparatively rare, was never extensively com-

³⁸ Cobo lived in Potosi, serving in the Jesuit Mission there between 1615 and 1618.



MYROXYLON PEREIRAE, Klotzsch.

mercialised. Its bark however, appears to have been exported to Europe where it was used as a febrifuge.

In addition to *Myroxylon peruiferum*, Lin. fil., the genus includes two other species, viz. *Myroxylon Percirac* Klotzsch, and *Myroxylon Toluiferum*, also indigenous to America. Cobo in the following description *Del Bálsamo* gives an account of both and he was therefore the first to identify and describe the three species of *Myroxylon*. "The tree which produces balsam in these Indies" Cobo himself explains "is not of a single species, but of three or four . . . one species of tree . . . grows in the diocese of Guatemala, where I saw it, and in other warm lands":—

BALSAM

The tree which produces Balsam in these Indies is not of a single species, but of three or four. This liquor is very similar to the *Syrian Balsam*, and not inferior to it in aroma and virtues.

One species of tree which yields this *Balsam*, and in the greatest quantity, grows in the diocese of Guatemala where I saw it, and in other warm lands. It grows larger than a mulberry and has a thick trunk and fragrant as well as tough wood, which is put to those uses requiring very strong timber, as for instance the axles of sugar-making machines, and other similar uses.

Its leaves are like those of the almond, somewhat larger and rounder but sharp pointed. The flowers are yellow and grow at the ends of the branches; the seed pods are in the form of long pockets which without doubt contain a white seed which verges on a yellow colour.

On scarifying the trunk of this tree a liquid exudes which we call *Balsam*, the colour of treacle, a blackish red, of a sharp, somewhat bitter flavour and a strong but pleasing smell.

This liquid is also extracted in another way, which is to boil in water the shoots and tender twigs especially picked for this purpose, immersing them in an earthenware vessel with nothing but water. The second method is not so good as the first, but both are effective for perfuming and cure many maladies. From the seed also, a very beneficial oil is extracted.

A second tree which produces *Balsam* is of medium size, the trunk not thicker than the thigh, with hard, fragrant wood. It has leaves a little larger than a *real*; the flower is small and white, the fruit similar to the berries of the laurel. The liquor is extracted from this tree from its impregnated bark by a method of distillation.

The tree from which the *Balsam* is extracted in the *Isla España* is known as *Goacohax*; it is of the size and shape of a pomegranate tree, not very pleasing in appearance. Like the pomegranate it has one, two or three main

stems, and in the leaves also it resembles the latter, except that it has fewer. Furthermore it resembles it in the trunk which is dry; and in the greenness of its leaves. The branches do not meet in a fork but spring out each one separately.

The *Balsam* is obtained by incision, and by scarifying the trunk of the tree as well as by boiling and pressing the leaves. If the wood is lighted like candlewood it gives off a pleasant odour.

Among the people of Tolu, diocese of Carthagená, *Balsam* is also obtained from a tree of the size of a pomegranate, and this *Balsam* and the first mentioned are the most precious, but they are very different in that the first is liquid, like syrup, while that of Carthagená is solid and hard and is ground to powder.³⁹

The main points of Cobo's description "Del Bálsamo" are:—

- (a) Seed pods grow at the ends of the branches in the form of *long pockets containing a white seed tinged with yellow.*
- (b) Yields a *balsam similar to the Syrian Balsam.*
- (c) *From the seeds is also extracted a very beneficial oil.*
- (d) Thick trunk, *fragrant as well as tough wood.*
- (e) Grows in the diocese of *Guatemala*. Another species grows in the district of *Tolu* near Carthagená.
- (f) *Wood put to those uses requiring very strong timber, for instance the axles of sugar-making machines and other similar purposes.*

The first tree described in Cobo's *Balsamo*, being indigenous to the Balsam Coast of San Salvador then in the diocese of Guatemala, is *M. Percirae* Kl. The bark of its young branches is a purplish grey colour; its balsam is obtained by the scarification and absorption method, not by incision. This is the balsam which also became known as Peruvian Balsam⁴⁰ and commercially supplanted *M. Peruiferum*, Lin. fil.

The last species referred to by Cobo in his description *Balsamo* is *M. Toluiferum*, and as he states, it is "Obtained among the people

³⁹ For original Spanish text *vide* Appendix (g).

⁴⁰ It is sometimes explained that the name "Peruvian Balsam" was given to the product from San Salvador because the Balsam was probably shipped first to Callao in Peru, and from thence transported to Europe (Flückiger and Hanbury *Pharmacographia*, p. 207).



MYROXYLON TOLUIFERUM, Mill.

of Tolu, in the diocese of Carthagena . . ." and from the district takes its name. Its balsam is obtained by incision.

It is clear that regarding the trees referred to in the descriptions of Espinosa and Cobo, their main characteristics, the mention of the same virtues, geographical places, and the purposes for which their wood is used, make it obvious that they refer to trees of the same genus, viz., *Myroxylon*. But it is noteworthy that these two authors apply the name *Quina-Quina* only to the species which grew in the Quichuan districts of Peru, viz., *Myroxylon peruiferum*, Lin. fil. The two other species which grew elsewhere Cobo merely calls *Balsamo*.

Cobo's mention of the "diocese of Guatemala" in "Del Bálsamo" indicates that the species was undoubtedly the tree now known as *Myroxylon Pécirac* Kl., indigenous to the Costas del Bálsamo of San Salvador, formerly part of Guatemala. It is the balsam from this tree which has been circulated commercially since the early years of the Spanish conquest⁴¹ and almost from the beginning was known as Peruvian Balsam, notwithstanding the fact that it did not come from Peru. The real, and much superior Balsam of Peru was that which Cobo describes by the Quichuan name of *Quina-Quina*, which grew in Peru.

Maldonado in his work on Peruvian Materia Medica suggests that Cobo never saw the *Myroxylon* tree, but Cobo tells us in his description that "Balsamo grows in the diocese of Guatemala where I saw it." Also he says, in regard to *Quina-Quina*: "In Potosi a marvellous oil is made from the seeds in this manner . . ." We know that between the years 1615 and 1618, Potosi was one of the places at which Cobo was stationed, where he ministered to the people who extracted the oil, and used the timber in the manner of which both he and Espinosa speak.

Between the years 1615 and 1621, Cobo was also stationed at La Paz and Arequipa, all of which were in the heart of the Peruvian Balsam habitat. It was the Jesuits of La Paz who "were wont to collect the very bitter bark with great care and send it to Rome,

⁴¹ Maldonado y Esposto, *Contribución al Estudio de la Materia Médica Peruana*: Lima, 1919.

where under the name of *Quina-Quina* it was employed against intermittent fevers."⁴²

From the foregoing evidence it may be safely concluded:—

1. That the *Quina-Quina* of Espinosa and the *Quina-Quina* of Cobo are both early descriptions of the Balsam tree, botanically known as *Myroxylon peruiferum* Lin. fil., which was indigenous to Peru and therefore the source of the true Peruvian Balsam.
2. That Cobo's *Balsamo* is a description of several species of balsamic tree, including that known botanically as *Myroxylon Peciirae* Kl., which was indigenous to the San Salvador district of Guatemala, and was the balsam which commercially supplanted the balsam from Peru. It never bore the indigenous name *Quina-Quina*, as it never grew in the land of the Quichuan people.

It is also apparent from the foregoing quotations from Espinosa and Cobo that neither *Quina-Quina* nor *Balsamo* bears any relation whatever to the genus *Cinchona*. But Cobo makes this fact doubly certain by his description *Del Arbol de Calenturas*⁴³ which is unquestionably an account of the genus *Cinchona*:—

OF THE FEVER TREE

In the district of the city of Loja, diocese of Quito, grows a certain kind of large tree, which has bark like the cinnamon, a little more coarse, and very bitter; which, ground to powder, is given to those who have a fever, and with only this remedy, it leaves them. Having taken a quantity of this powder, to the weight of two *reales*, in wine or in some other liquid, soon after it reduces the temperature.

These powders are now very well known and esteemed, not only in all the Indies but in Europe, and are urgently sent for and demanded from Rome.⁴⁴

Cobo's description of this tree, although brief and somewhat sparse in botanical detail, is unmistakably of the genus *Cinchona*.

⁴² La Condamine, C. M. de, *Mémoires de l'Académie Royale des Sciences*; 1738.

⁴³ The similarity of this name to the name for *Cinchona* quoted by Chifflet (1651-3) viz. "Palo de Calenturas," also helps to confirm the identity of Cobo's description.

⁴⁴ For original Spanish text *vide* Appendix (h).

His mention of the district of Loja from which Cinchona first came, his comparison of its bark with that of cinnamon, his mention of its bitterness, and his description of its remedial application to the cure of fevers, all demonstrate the identity of this tree.

Cobo's account of "The Fever Tree" receives striking confirmation by the following passage which occurs in the work of Antonio de la Calancha, an Augustinian monk, published with an ecclesiastical imprimatur dated 1633 at Lima:—⁴⁵

A tree grows which they call 'the fever tree' (*arbol de calenturas*) in the country of Loxa, whose bark, of the colour of cinnamon, made into powder amounting to the weight of two small silver coins and given as a beverage, cures the fevers and tertianas; it has produced miraculous results in Lima.

This account, which must have been written before 1633, is no doubt earlier even than Cobo's but both are so early as to be of considerable importance to the history of Cinchona. They are clearly references to the same tree, to which they give precisely the same name, and they agree concerning both the colour of the bark and the weight of the dose used in the treatment of intermittent fevers.

At some time before 1633, the date of Calancha's description, the febrifuge qualities of the Loxa bark (Cinchona) became known to the Spaniards. If we may accept La Condamine, and a number of other authorities, for some time the virtues of Cinchona were little appreciated and it was illicitly sent to Europe in substitution for, or mixed with the bark of the Peruvian Balsam tree, and used in the treatment of intermittent fevers. Being thus a spurious substitute, it was distributed under the name *Quina-Quina*, the indigenous name of the Peruvian Balsam tree. Everything points to the probability that it was in these circumstances that Cinchona came to bear the name *Quina-Quina*.

It is interesting also to observe that the very name by which the bark of Cinchona became soon afterwards known, viz., *Cascarilla*, a name given by the merchants of Loxa, implied a comparison between its characteristics and those of some other tree, which must have been Myroxylon. *Cascarilla*, which means "little bark" signified the fact that the bark was thinner and of finer texture than

⁴⁵ Calancha, Antonio de la, *Cronica Moralizada del orden de San Augustin en el Perú*, Barcelona 1639, Chapt. IX.

the coarser bark of the Peruvian Balsam tree. Thus it will be realized that as the Loxa bark (Cinchona) was being surreptitiously distributed under the name of *Quina-Quina*, implying that it was the bark of the then more popular Peruvian Balsam tree, care would naturally be taken by those who profited by the substitution to ensure that as few persons as possible would be able to detect the genuine bark from the false, particularly the medical profession. These circumstances would also seem to explain the contemporary use of the name Peruvian Bark⁴⁶ for Cinchona, one which might easily have been taken as implying that it was the bark of the Peruvian Balsam tree.

Thus both Cinchona and Myroxylon came to be commonly known by the same name *Quina-Quina*, being sold as one and the same remedy. As both were claimed to have been introduced into Europe by the Jesuits, the name Jesuit's bark, which was given to Cinchona, did nothing to clarify the confusion. Owing to the fact that Cinchona bark was so much more readily obtainable in Peru than the rarer Myroxylon, it gradually supplanted Peruvian Balsam bark as a febrifuge and still retained the old name *Quina-Quina* which had been common to both during the illicit process of mixing the two barks. That Cinchona was the superior febrifuge was not established for some time.

Thus it happened that the medical authors of the late 17th and early 18th century, writing upon the *Quina-Quina* or Jesuits' bark of their day (Cinchona), handicapped by a lack of botanical knowledge, easily fell into the error of accepting early descriptions of the original *Quina-Quina* which were not of Cinchona but of Myroxylon.

CONCLUSIONS

1. That the *Quina-Quina* of Peru was originally Peruvian Balsam (*Myroxylon peruiferum*, Lin. fil.) as proved by the early descriptions of the Carmelite Espinosa and the Jesuit Bernabe Cobo.
2. That the descriptions "Del Arbol de Calenturas" by Antonio

⁴⁶ Bado, S., *Cortex Peruviae redivivus*. . . . Genoa 1656; *Anastasis Corticis Peruviae* . . . , Genoa 1663; and other works.

de la Calancha and Bernabe Cobo certainly apply to the genus *Cinchona*, and strongly support the contention that originally Cinchona was not known by the Quichuan name *Quina-Quina*.

3. That Cinchona was given the name *Quina-Quina* by European merchants at the time when it was being illicitly used as a substitute for Peruvian Balsam bark.
4. That when Cinchona finally supplanted Peruvian Balsam as a febrifuge is still retained the name *Quina-Quina*.
5. That for a long period the medical profession lacked sufficient botanical knowledge to distinguish one bark from the other.
6. That writers on Cinchona not only during the seventeenth century but ever since have been prone to believe that all facts relating to *Quina-Quina* belong to the history of Cinchona.

§ 3. EFFECTS OF THE CONFUSION UPON THE LITERATURE OF THE 17th AND 18th CENTURIES

The manuscript records of Espinosa and Cobo having established the fact that the name *Quina-Quina* originally belonged to the genus *Myroxylon*, and not to the genus *Cinchona*, it remains to be shown how the misapplication of the Quichuan name to Cinchona was destined to cause a great deal of confusion and error in the medical literature of the 17th and 18th Centuries. Other factors also contributed to the chaos which resulted.

The illicit use of distinguishing names, and the employment of spurious substitutes, was a common practice of that period, particularly in connection with the sale of remedial substances. The practice of merchandizing spurious medicines was facilitated by the lack of scientific knowledge amongst physicians and others, which made accurate identification extremely difficult. The era of the Linnean system had not arrived. Frequently, authors who wrote upon medical subjects had never seen either living or dried specimens of the plants they affected to describe, and were content to rely upon their own interpretations of the descriptions of travellers untrained in botanical observation, or upon earlier works which, if wrong, as they frequently were, served only to make confusion worse con-

founded. Many writers, because Cinchona had come to be called *Quina-Quina*, fell into the error of presuming that all descriptions of *Quina-Quina* related to Cinchona.

By a strange mischance the confusion caused by the use of the name *Quina*, or *Quina-Quina* for both *Myroxylon* and Cinchona, was even more seriously complicated by a third plant becoming involved, *Smilax China*, Lin.⁴⁷ then known as *China* or *China radix*.

In the *Schedula Romana* of 1651, the earliest known printed document⁴⁸ relating to Cinchona, the Spanish Quichuan name "Quina" (pronounced "Keena") was rendered into Italian as "C-h-i-n-a" (also pronounced "Keena")⁴⁹ instead of using its Spanish-Quichuan form "Q-u-i-n-a." In this pamphlet, published in Italian for the guidance of apothecaries, the remedy is called "China della febre." In November 1653, however, Petrus Castelli⁵⁰ refers to Peruvian Bark merely as "China" in his Latin pamphlet, but Chifflet⁵¹ a little earlier in the same year, gives excerpts from the *Schedula*, translated into Latin, in which he renders the name as "China febris." Roland Sturm in 1659, in his famous work,⁵² gives the complete text of the *Schedula Romana* in Italian, followed by a translation into Latin. In the Italian text he uses the original "China della febre," which he also rendered into Latin as "China febris." Thus it became quite common in the literature of Cinchona to find either the Spanish-Quichuan term *Quina-Quina* or the Italian term *China-China*.

Yet a further complication arose. For some time before Cinchona was discovered, the root *Smilax China*, Lin., was well known to physicians as *China radix*, so-called from the country from which it was first imported. As in Italian the geographical name "China" is spelt alternatively "C-h-i-n-a" or "C-i-n-a," it is easy to see how Brunacio in 1661 (writing on Cinchona or *Quina*) imagining the "China" to indicate the habitat of the plant, came to the erroneous

⁴⁷ Linnaeus, *Species Plantarum* No. 1029.

⁴⁸ *Schedula Romana* of 1651. For verbatim text *vide* Sturm—*Febrifugi Peruviani*. . . . Antwerp, 1659.

⁴⁹ Italian "Ch" is pronounced hard as "k" in English or "q" in Spanish.

⁵⁰ Castelli, P., *Responsio Chimica*. Messanae 1654.

⁵¹ Chifflet, J. J., *Pulvis Febrifugis Orbis Americani*. 1653.

⁵² Sturm, R., *Febrifugi Peruviani*. Antwerp 1659, p. 146.

D E
CINA CINA,
S E V

PVLVERE AD FEBRES

Syntagma Physiologicum.

AVCTORE

GA VDENTIO BRVNACIO

Doctore Romano.

Ad Illustriss. & Excellentiss. Dominum

ANTONIVM BERNARDVM

D. Marci Procuratorem Meritissimum.



VENETIIS, M.DC.LXI.

Apud Nicolaum Pezzana.

Superiorum Permissu.

TITLE PAGE OF BRUNACIO'S WORK ON CINCHONA IN 1661.

conclusion that *Quina* and *China* (smilax) were related. Therefore in order that there might be no misapprehension that this "China" (i. e. *Quina*) which came from Peru was but another species of the oriental "China" (smilax) in his work upon Cinchona⁵³ he adopts the name "Cina-Cina."

In fact, he says on page 15:—

Nec pertinaciter inquirendum, ut aliquibus dubium fuit, an Cina Cina sit cortex Arboris, vel ipsius Radicis Cinæ . . .

Consistently throughout the book he uses the spelling "Cina."

Briefly this orthographical tangle may be summarized as follows:

"QUINA" (Spanish-Quichuan) pronounced "Keena." Used in connection with *Myroxylon* and *Cinchona*.

"QUINA" or "CHINA" both in Latin pronounced "Keena." Used for *Myroxylon* and *Cinchona*.

"CHINA" (Italian) pronounced "Keena." Used for *Myroxylon* and *Cinchona*.

"CHINA" (Italianate-Latin) pronounced "Keena." Alternative spelling of the geographical place-name China, from which the root of Smilax was called *China-radix*.

"CINA" (Italian and Latin) pronounced "Tscheena." Italian spelling of "China" (place-name), applied by Brunacio to Cinchona, under the misapprehension that it was related to oriental "china-root" (*Smilax China*, Lin.).

When to this extraordinary etymological complication were added errors of identification due to inadequate botanical knowledge, the confusion which resulted in the literature of Cinchona becomes almost incomprehensible. It is a matter for small surprise, therefore, that the two *Quina-Quina* remedies, *Myroxylon* and *Cinchona* were repeatedly confused in the literature of the 17th and early 18th centuries, notwithstanding statements in the work of Roland Sturm⁵⁴ (1659) and in the short essay of Rothmann⁵⁵ (1663) that the new remedy called "Quina" has nothing in common with the "old Quina."

⁵³ Brunacio, Gaudenzio, *De Cina Cina seu Pulvere ad Febres*. . . . Venice, 1661.

⁵⁴ Sturm, R., *Febrifugi Peruviani*. Antwerp, 1659.

⁵⁵ Rothmann, C., *Resp. Anti-quartii Peruviani Historia*. Leipzig, 1663.

It is an extraordinary fact, which appears to have escaped the attention of cinchonologists, that the Northern school of authors, Sturm, Rothmann, etc., seem to have understood the difference between the two "Quina" remedies. It was in the early Italian cinchonological literature that the confusion began, and on account of the undeserved authority which it assumed, it was the principal cause of the chaotic state of affairs that ensued.

With the exception of the *Schedula Romana* (1651), Pietro Castelli's work⁵⁶ appears to have been the earliest Italian publication purporting to contain a description of Cinchona, it having been written in November 1653, and printed in 1654. It reveals in an extraordinary manner what a hopeless uncertainty prevailed at that time regarding the identity of Cinchona. There is no evidence whatsoever that, at the time of writing, Castelli had examined so much as a fragment of the bark, nor had he used a single dose of the powder. Moreover, it is practically certain that in November 1653, he knew nothing of Chifflet's treatise which had appeared earlier in the same year; in any case it is clear he cannot have perused it.

How then did Castelli come to be writing about Cinchona? His essay assumes the form of reply to a certain chemical problem which had been propounded for his solution by his contemporary, Hieronymus Badus.⁵⁷ In his letter to Castelli, Badus also asks for information concerning what experience Castelli might have had regarding the "fever bark" from Peru.

At the end of his treatise, Castelli attempts to answer the question. "You ask further," he says, "what I think of that febrifuge bark brought from the Indies and used in quartan and tertian fevers. *I had indeed seeds of this plant thirty years ago under the name China China*, but was ignorant of its powers; now I find it described in the *History of Plants of New Spain* by Nardo Antonio Recchio,⁵⁸ Book IV," and proceeding he quotes verbatim the text of Hernandez'

⁵⁶ Castelli, Pietro, *Responsio Chymica . . . de effervescentia et mutatione colorem in mixtione liquorum chemicorum*. Messanae, 1654.

⁵⁷ The Latin form of this man's name is used here to avoid confusion with his contemporary, Sebastiano Bado.

⁵⁸ Embodied in Francisco Hernandez' "*Rerum Medicarum Novae Hispaniae thesaurus*." 1649.

description of the plant *Ytzticpatlis* (frutex febrifugus — fever shrub). He then discusses the plant further according to its leaves, its seed, its "temperamentum" (constitution), and continues by

116 RERVM MEDICARVM NO. HISP.



De YTZTICPATLI frutice.
Febrifuga. Cap. XXI.

YTZTICPATLIS, quem alij *conquiliel* vocant, frutex est radice fundens crassam, & longam, intus candentem, teneramque, plenam succo, & ex stipites purpureos. folia in plures cuspidiuisa, & has ipsas interdum sinuosas quae. florem candentem, ac paruum. fructum rotundum, Ponticis nucibus parem. Nascitur in collibus *Hoizocensibi*. Radix dempto cortice, qui impensè refrigerat, in læuorem redacta, aduersus febre solet deuorari. Ius decocti eius, loco aquae fontanae aut fluuialis, bibitum, eundem usum praestat. praeter quod calidas qualiter intemperies emendat, ac corrigit. N

THE YTZTICPATLIS, OR "FEVER SHRUB"

from Francisco Hernandez' *Rerum Medicarum Novae Hispaniae thesaurus*, published in 1649. This illustration was quoted by Pietro Castelli in 1653 as a representation of the Cinchona tree.

quoting Hernandez to the effect that "Radix dempto cortice . . . aduersus febres solet deuorari" (= the root with the bark removed is used to be taken against fevers).

The explanation of Castelli's sequence of error seems to be that about 1623 he had in his possession *Quina-Quina* seeds, i. e. the *Pepitas de Quina* (of Peruvian Balsam) known in Italian as *China*

China. When in 1653 he was questioned by Hieronymus Badus regarding Cinchona, which had then also become known in Italy as *China China*, he concluded that Cinchona was the remedy of which he had possessed the seeds thirty years before. So ill-founded, however, was Castelli's knowledge, that in his desire to furnish Badus with an illustration of the tree and a detailed description, he erroneously assumed that the *Ytzticpatlis* described by Hernandez, was the new Peruvian fever remedy (Cinchona) known in Italy as *China China*. Castelli could not possibly have had reliable experience of Myroxylon, Cinchona or the plant *Ytzticpatlis*. He evidently thought *Ytzticpatlis* to be species of *China radix* (Smilax) which like Brunacio his compatriot he imagined was identical with the remedy known in Italy as *China China*. Not only was he ignorant of the error of his assumption, but he seems also not to have known that at the time he wrote there were two different substances in Italy bearing the name *China China*—the true *Quina Quina* (Peruvian Balsam) and the false *Quina Quina* (Cinchona).

In 1663 the Italian physician, Sebastino Bado, published his second work on Peruvian Bark, namely *Anastasis Corticis Peruviae* . . . For centuries its position as the most authentic early record of the history of Cinchona has remained unchallenged. It is to Bado that we owe the first account of the cure of the Countess of Chinchon. Throughout his work he Italianates the name of the Spanish Count by spelling it as C-i-n-c-h-o-n (the initial "C" being pronounced in Italian as "Ch"). Bado, like other Italian writers, pursued the confusing habit of using Italian orthography for Spanish names when writing in Latin. It was from Bado's work that Linnaeus, when naming the genus, adopted the spelling C-i-n-c-h-o-n-a, as is proved by the bibliographical notes in Linnaeus' own writing contained in the annotated copy of his *Materia Medica* of 1749.⁵⁹

As for the botanical characteristics of the Cinchona tree, Bado himself very plainly knew nothing, and, as did many of his followers, contented himself with statements drawn from other sources, but whether correct or not Bado obviously did not know.

⁵⁹ Linnaeus, C., *Materia Medica*, 1749, Vol. 1, p. 24. (Author's annotated copy in possession of the Linnean Society of London).

A N A S T A S I S
CORTICIS PERUVIÆ,

S E V

C H I N Æ C H I N Æ

D E F E N S I O ,

SEBASTIANI BADI GENVENSIS

Patrij vtriusque Nosoehomij olim Medici ,

Et

Publicæ Sanitatis in Ciuitate Consultoris.

Contra

V E N T I L A T I O N E S

IOANNIS IACOBI CHIFLETII,

G E M I T V S Q V E

VOPISCI FORTVNATI PLEMPH,

Illustrium Medicorum.

*Opus in tres libros distinctum, & in eis Documenta
Medicina, & Philosophia.*

ILLVSTRISSIMO D.
IOANNI LVCÆ DVRATIO.



GENVÆ, Typis Petri Ioannis Calenzani. M. DC. LXIII.
Superiorum Venia.

TITLE PAGE OF SEBASTIANO BADO'S WORK ON CINCHONA
published in 1663.

Speaking of the tree which he calls "China China," he says:—

Praeter Corticem, sunt qui dicant, inesse eandem virtutem fugandis febribus semini Arboris illius, quem patrio sermone, seu Hispano dicunt *pipitas de quina*; ⁶⁰ estque similis, aiumt, semini cucurbitae.⁶¹

Translation.

Some say the same virtue of expelling fevers exists not only in the bark, but also in the seeds of that tree, which in their native language, or Spanish, they call '*pipitas de quina*'; it is similar they say to the seed of a cucumber.

He likens the seeds to those of the cucumber which are nothing like the tiny seeds of Cinchona but much more closely resemble those of Myroxylon. Moreover the medical use of the seeds of Cinchona has never been claimed save by Bado and his followers, but was claimed for the old *Quina-Quina* (Myroxylon) seeds, which, as Espinosa, Cobo and others tell us, yielded a valuable medicinal oil.

This frequent recurrence of the term *Pepitas de Quina* in connection with the seeds of the Cinchona tree, calls for a closer examination. La Condamine records the fact that the seeds of the Peruvian Balsam tree were known in Peru as *Pepitas de Quina*. The meaning of the Spanish word "Pepita" is "Kernel" or "pip" such as from melon, cucumber, or pomegranate, etc., as distinct from tiny seeds, for which the word "semilla" is used. This serves to establish the relevancy of the term *Pepitas de Quina* to Myroxylon and not to Cinchona, the tiny seeds of which could only be correctly expressed in Spanish by the word "semilla."

In another part of his work, Bado purports to give other features of the Cinchona tree. He says "the flowers appear to me to agree with those of pomegranates which have a small crowned calix." Compare this with Cobo's description of the Balsam tree (*vide* pp. 435, 436) which he likens to the pomegranate in certain details.

Like his fellow countryman Castelli, Bado was therefore obviously unfamiliar with the characteristics of the Cinchona tree. Not one true physiological characteristic of Cinchona does he give, although his work stands accepted as the greatest of the early authorities on

⁶⁰ Obviously a typographical error for *pipitas de quina*. It is the only occasion on which Bado uses the Spanish form *Quina*; otherwise he uses *China*, the Italian form throughout.

⁶¹ Bado, S., *Anastasis Corticis Peruviae*. Genoa, 1663; cap. I, p. 18.

the remedy. Rarely does he express facts of his own determination; more often he quotes others (Bollus and H. Badus and Villarobel), but in most cases with unfortunate results. Singularly destined was the work of Sebastiano Bado to mislead posterity. His compatriots of the seventeenth century almost without exception were equally unreliable, yet the works of these early Italians assumed an authoritative ascendancy which, on the score of accuracy, they did not merit. In consequence the tangle of error and contradiction grew as the literature of the subject increased.

Although famous amongst the early cinchonologists, the English physician Sir Robert Talbor makes practically no attempt to describe the tree, and the little information that Blegny imparts in 1680, in his book upon Talbor's remedy,⁶² savours rather of the imaginative when he describes it as possessing a "leaf like that of a young oak."

To the work of the celebrated Gideon Harvey in 1683, we must turn for the earliest English attempt to describe the tree yielding the Jesuit's Bark.⁶³ On page 150 of his work, he somewhat guardedly tells us that:

Many will have this celebrated Drug the rind of dwarf bitter Almond-like trees, twice a year putting forth Yellow flowers.

A comparison of this with Cobo's statement in *Del Bálsamo* that "the flowers are yellow and grow at the ends of the branches," suggests that Harvey here inadvertently refers to *Myroxylon*, a suspicion which is strengthened considerably by his statement (page 178) that the bark is not only "*Rcsinous*" but "*Viscous and consequently Emplastic*," features which are characteristic more of *Myroxylon* than *Cinchona*.

On page 165 of Harvey's work occurs a further passage which has long puzzled students of the history of *Cinchona*, but which viewed in the light of these investigations appears to be capable of simple explanation. He says:—

Though this Jesuits' powder is not a medicine newly found (*the vertues of stopping quartan Agues having been experienced above a hundred years since*) . . .

⁶² Blegny, Nicholas de, *Remedium Anglicum pro Curatione Februm*. 1680.

⁶³ Harvey, Gideon (M.D), *The Conclave of Physicians. . . . Also a Peculiar Discourse on the Jesuits' Bark*. 1683.

Written in 1683, the passage italicised infers that Jesuits' Bark was known in 1583 and has whetted the appetite of almost every research student upon Cinchona, but hitherto without result. Taking into consideration the quotation from Harvey's book previously given, which strongly suggests reference to Myroxylon, the logical corollary ensues that Harvey was ascribing to Cinchona a historical fact which rightly belonged to the febrifuge bark of the Peruvian Balsam tree (*Myroxylon*). Therefore it is almost certain that he, like many before him, because he did not know that the new *Quina-Quina* (Cinchona) was an entirely different tree from the old *Quina-Quina* (Peruvian Balsam) made his statement that it was known before 1583, which was perfectly true of Peruvian Balsam, for Monades mentions it in 1565, but not of Cinchona about which Harvey was presuming to write. Harvey was also confused by the mixing of the two barks, which is suggested by the following passage:—

the best of the Parcels (of bark) differ from one another in Colour, Taste, Weight, Resin and Grain . . .

To turn to Richard Morton's famous work⁶⁴ is to find still more definite evidence of confusion existing between Myroxylon and Cinchona.

Morton commences his description by saying that the tree has "white and blue flowers like those of the pomegranate, but it bears no fruit," which is merely a quotation of Bollus taken from Bado. Then he continues:—

The wood of this tree and the flowers, as they are not bitter (as Hieronimo Badus testifies) are endowed with no febrifuge or medical virtues. *But the resin which exudes from the tree, especially from the bark, and even the seeds which are known in Spanish as "Pepitas de Quina" have a similar quality but far inferior to that of the bark.*

Here again one encounters those unquestionable characteristics of Myroxylon, the *Pepitas de Quina* and the resinous exudation, with evidence of the use of the bark and the seeds as a febrifuge. He has compiled his description from sources which he little knew had served him badly, but when he describes the bark, his accuracy

⁶⁴ Morton, Richard, *Opera Medica*. 1737.

suggests that he had been fortunate in examining genuine specimens of *Cinchona*:—

The genuine bark is cinnamon of colour of pleasing and bitterly aromatic fragrance . . . when the genuine is cracked by the teeth, or broken in any other way, it is *friable not viscous and glutinous*.

In this respect Morton's description is diametrically opposed to that of Harvey, mentioned above.

Vezou in his pamphlet on *China China* in 1696⁶⁵ says that the tree "has leaves like pear trees, and white and blue flowers and bears no fruit," a statement again borrowed from Bado's quotation of Bollus. Donzellus, however, speaks of the same blue and white flowers resembling those of the pomegranate, but adds that the fruits are like those of the "common larger *Cardamum*."

Returning to English sources, the confusion becomes almost incredible. Dale in *Pharmacologia* (1718) and Ray, in his *Historia Plantarum* (1686-1704) describe the *Quina-Quina* tree, and their accounts have passed into the literature of *Cinchona*. Nevertheless, it is evident that they both inadvertently describe the original *Quina-Quina* (*Myroxylon*) and not the *Loxa* bark (*Cinchona*).

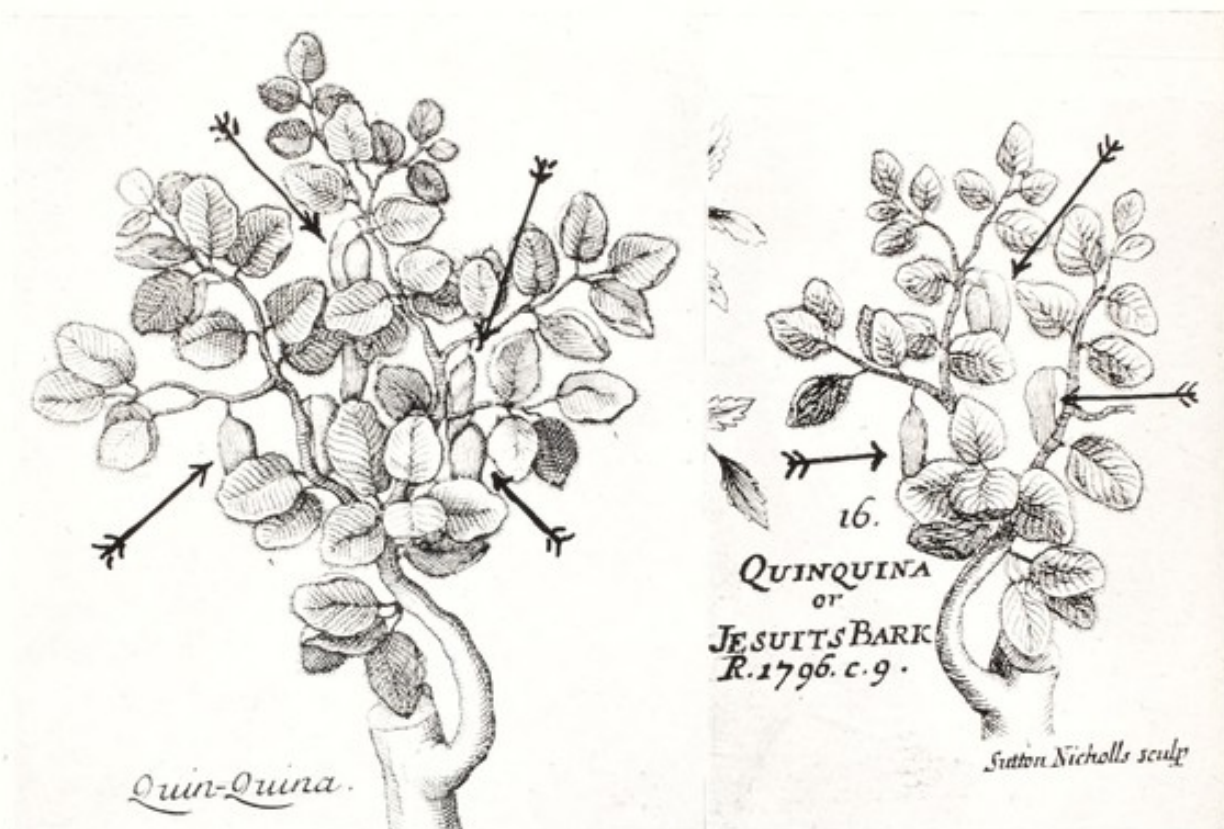
Dale says:—

Concerning the Peruvian Febrifuge tree, Peruvian Bark is taken from the tree about as large as a pear tree, *with leaves like those of the ivy, but a little smaller and evergreen. It bears a fruit not unlike a chestnut which is rightly called China China, and is esteemed by the natives more than the bark taken either from the trunk or branches.*

This curious description is found to have been taken almost verbatim by Dale from a letter by "Dr. William Oliver . . . to Mr. James Petiver, F. R. S. concerning the Jesuit's Bark" which was published in the *Philosophical Transactions* of 1705. Once again the reference to the use of the fruit by the natives for medicinal purposes points to Peruvian Balsam. Evidently Oliver's letter made little impression upon Petiver who, in his *Hortus Peruvianus Medicinalis* (1715) gives both an illustration and a description of "Jesuits' Bark or *Quinquina*." Of the tree he says:—

⁶⁵ Vezou, Franciscus, *Au Vires consociare amanti opium et China China*: Paris, 1696.

It grows on the Mountains near the City of Loxa in the Province of Quito in Peru; its size about that of a cherry tree; the L(eaves) round and indented, its Flower reddish, with a Pod including an almond-like Kernel, covered with a thin Skin. Its bark is much better known to us than either its leaves, flower or fruit.



A.

B.

ILLUSTRATIONS PURPORTING TO REPRESENT THE CINCHONA TREE

A. is from Pomet's *Histoire des Drogues* (1694), and B. is from Petiver's *Hortus Peruvianus Medicinalis* (1715) obviously copied from Pomet. Note the leguminous pods.

Petiver's description also has that definite characteristic of Myroxylon, namely the "pod including an almond-like kernel." In the very curious illustrations he gives, taken from Pomet, although strangely unlike either Myroxylon or Cinchona so far as the leaves are represented, the long pods are unquestionably more suggestive of Peruvian Balsam.

Further consideration of the descriptions of Petiver and Pomet brings to light an extraordinary series of misconceptions which occurred at the close of the seventeenth century; that progressive period in the history of the medical and allied sciences which witnessed the brilliant work of John Ray and Leonard Plukenet in botany, of Petiver and Hans Sloane in medicine, and Pomet in pharmacy. During the period under review these five stood high in the realms of Science. Yet all of them may be cited in a curious illustration of the hopelessly inaccurate knowledge which then existed regarding Cinchona, or, as they knew it, "Jesuits' Bark."

In the British Museum (Natural History) are five sources⁶⁶

1. Pomet, P. *Histoire générale des Drogues*. 1694. p. 132.
2. Petiver, James. *Hortus Peruvianus Medicinalis*. 1715.
3. Ray, John. *Historia Plantarum* (1686-1704).
4. Sloane, Sir Hans. *Herbarium*.
5. Plukenet, Leonard. *Almagestum Botanicum*. 1696.

all of which play a significant part in this illustrative example.

1. Pomet, in 1694 published his History of Drugs, in which he describes "*Du Quinquina*." Under this heading he gives a description of two species of Myroxylon and an illustration of the tree which clearly shows its leguminous pods; but he intermingles his account of them with historical data which certainly relates to Cinchona.

2. Petiver in 1715 issued his *Hortus Peruvianus Medicinalis*, and included a description of "Jesuits' Bark or Quinquina" in which he says the tree bears "a pod including an almond like kernel, covered with thin skin." The illustration which Petiver gives is an inferior copy of Pomet's illustration reproduced in reverse. So Petiver, too inadvertently describes Myroxylon for Cinchona. Under his illustration he gives the title "Jesuits' Bark or Quinquina R. 1796," the latter reference being, of course, to the page of Ray's *Historia Plantarum* on which is found the source of Petiver's information.

3. Ray, in his *Historia Plantarum*, on page 1796, Cap. IX, gives an account of the tree with a long list of synonymous names, from

⁶⁶ These are purposely not taken chronologically but in the sequence in which they were used by each other in connection with the identification of "Quinaquina."

which the following are quoted:— ". . . *Quinquina* Hisp. *Palos de Calentura* . . . *Cortex Peruviana* . . . *Pulvis Patrum* (Sci. Jesuitam) & *Pulvis Cardinalis de Lugo*. Angl. THE JESUITS' POWDER." Ray's description definitely ascribes to "Jesuits' Bark" characteristics which belong only to *Myroxylon*.

4. Also extant is Sir Hans Sloane's annotated copy of Ray's work, together with Sloane's Herbarium Sheets, and he has cross-referenced the two. In the margin of Ray's description of the "*Quinquina*" he writes H. S. 91-27 H. S. 91-33 (references to the Herbarium sheet numbers) and "Vide Pl. A. 1. p. 12.6" (a reference to the description contained in Plukenet's *Almagestum*). An examination of the Herbarium Sheets of Sloane show that all three specimens are entitled "*Quinquina*" with the page number 1796 of Ray's book added.

5. In Plukenet's *Almagestum Botanicum*⁶⁷ at the reference given by Sloane is "*AGERTO affinis Peruviana frutescens*" to which he adds the synonym "*Quinquina*." His illustration on Plate 27 gives these same titles; and it corresponds exactly with the Herbarium specimens of Sloane; both specimens and illustrations possessing lanceolate leaves with sharply serrated edges. These specimens have been definitely identified as being *Iva FRUTESCENS*, a wild shrub which grows on the salt marshes of Mexico and Florida, once known as a false Jesuit's Bark.⁶⁸

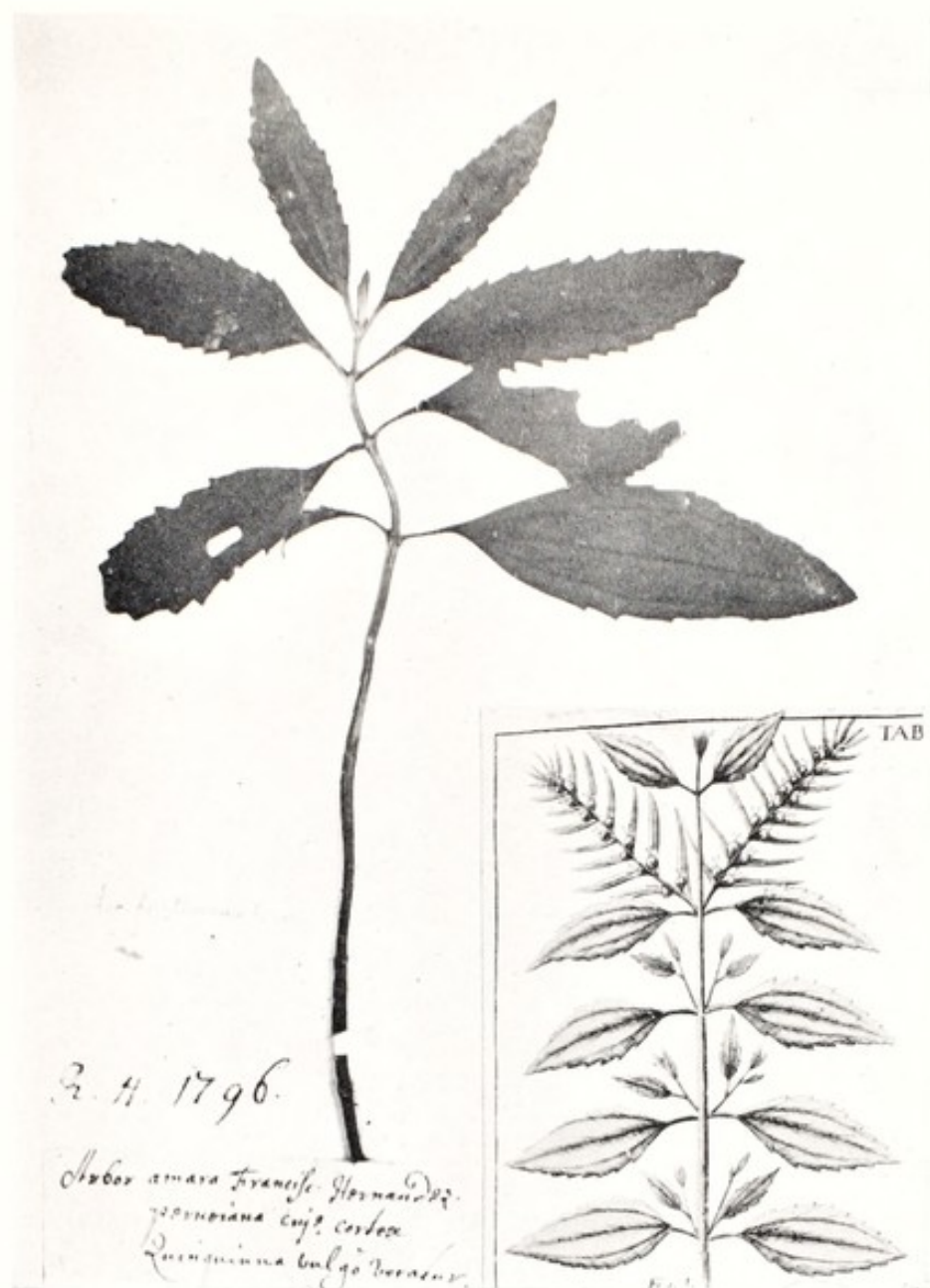
Such was the confusion existing at the close of the seventeenth century, that these five eminent authorities on materia medica, in attempting to describe *Cinchona* confused the characteristics of *Myroxylon*, *Cinchona* and *Iva Frutescens*; they were misled by the fact that all three were also known by some form of the name *Quina-Quina*.

Having probably read La Condamine, Rosen in his able Dissertation⁶⁹ upon *Cinchona* (1744) is to some extent aware of the

⁶⁷ Leonard Plukenet, M.D. (1642-1706) was employed by Sloane to arrange and annotate his collection of botanical specimens.

⁶⁸ For the identification of Sloane's specimen of "Jesuits' Bark" as *Iva Frutescens* I am indebted to Dr. J. Ramsbottom, Keeper of the Botanical Department of the British Museum (Natural History).

⁶⁹ Rosen, E., *Dissertatio Medico Practica de Cortice Peruviano vulgo China dicto*. 1744



A.

B.

- A. THE HERBARIUM SPECIMEN CALLED "QUINQUINA" IN SIR HANS SLOANE'S COLLECTION bearing the reference number "R. H. 1796" which means Ray's *Historia Plantarum* page 1796 where an account of the Cinchona tree is given.
- B. THE ILLUSTRATION OF *IVA FRUTESCENS* also called "Quinquina," from Plukenet's *Almagestum Botanicum*.

confusion between Myroxylon and Cinchona, although he does not attempt to trace its origin:—

" Since the true description of the Chinchona (sic) has been made known," he writes, " it will be pertinent to distinguish both it, and the bark of it, from others which resemble it in form and name."

First amongst these he places

The *Quina-Quina* tree, bearing the same name, and on that account often confused with it.⁷⁰ This tree bears fruit known as *Pepitas de Quina-Quina*, which are like almonds in shape and contain resin or balsam both fragrant and comforting to the nerves by its odour. The bark of this tree is exceedingly bitter and long before the true bark was found was well known as a febrifuge especially for Tertians, to the Jesuits in Peru. Hence it came about that the Loxa or true Peruvian Bark, after it was brought to Rome, greatly exceeding the old in efficacy, adopted the name of the former which was going out of use.

Here then is the question of the confusion between Myroxylon and Cinchona simply but truly stated, yet the errors of description and identity committed by the early Italian authorities continued to persist in Cinchonology.⁷¹ In 1744, in an English translation of Pomet's work, under the heading of " The Peruvian Bark " is a description which is so obviously that of a species of Myroxylon that it is worth quoting:—

The Kinquina is the Bark of a Tree that grows in Peru, in the Province of Quito upon the Mountains near the City of Loxa. This tree is almost the size of a Cherry Tree; the Leaves are round and indented; it bears a long reddish flower, from whence arises a kind of husk, in which is found a kernel like an almond flat and white, cloth'd with a thin rind; that Bark which comes from the trees at the Bottom of the Mountains is thicker because it receives in more Nourishment from the Earth: It is smooth, of a whitish yellow without, and of a higher colour within.

Not one feature of the tree so described is consistent with Cinchona, except the fact that it grows near Loxa. Moreover, Pomet proceeds to add the following quotation from Lemery:—

⁷⁰ Rosen in a footnote points out that Bado, Chap. I., Werlhoi, pp. 31 and 85, Ray and Dale, all describe the " false *Quina-Quina* tree " (i. e. *Myroxylon*).

⁷¹ A modern example of erroneous identification due to the misuse of the term *Quina* has been given on pages 427, 429.

Lemery says: "*Kinakina, Quinquin, Cortex Peruviana, The Peruvian or Fever-Bark* is called so from the Tree that produces it in Peru where it grows, about the size of our Cherry trees: the Leaves are round and indented: the flower is long of a *reddish colour* and is *succeeded by a Pod, which contains a flat kind of Kernel* within that is white and enclosed in a very thin skin. It contains a great deal of fix'd salt and *abounds with an Oil.*"

In these descriptions the mention of the husk or pod, the flat kernel, the oil, and the whitish yellow bark, all proclaim the descriptions relevant to Myroxylon.

Sufficient of the error and confusion which permeated the literature of Cinchona during the seventeenth and eighteenth centuries has now been demonstrated to show that if the history of Cinchona is to be properly investigated and authentically written, a great deal of research must be undertaken upon lines not hitherto attempted. The documentary evidence of the history of Peruvian Balsam must be considered, and from the works purporting to deal with the history of Cinchona must be carefully eliminated erroneous conclusions due to its confusion with Peruvian Balsam.

CONCLUSIONS.

1. Owing to the confusion which resulted from the fact that the name *Quina Quina*, belonging originally to Peruvian Balsam, was also given to Cinchona, and to the fact that European medical writers lacked precise knowledge of the two trees, the early literature of Cinchona is replete with statements that belong not to Cinchona but to Peruvian Balsam.
2. That the serious inaccuracies of the early Italian authors on Cinchona (Castelli, Bado, etc.) were primarily responsible for establishing a state of utter confusion in the literature of the history of Cinchona.
3. That the undeserved authority which these early Italian works assumed, caused subsequent literature seriously to add to the confusion which they had caused by their errors.
4. That these factors are to-day the main obstacles to a clear understanding of the history of Cinchona.

[To be continued]

§ 4. THE FABULOUS STORY OF THE COUNTESS OF CHINCHON

No story in medical history has captured the imagination more completely than the romantic account of the cure of the Countess of Chinchon of malaria by the use of Cinchona Bark, during the time that her husband was Viceroy of Peru—from 1628-1639. For centuries it has been inseparably associated with the discovery of the febrifuge Cinchona, so named after its heroine by Linnaeus.

The story was first recorded in 1663 by Sebastiano Bado⁷² who says that he derived his information from a letter written by an Italian named Antonius Bollus, a merchant who lived many years in Peru. So far as is known, neither the original nor any record of it, other than that given by Bado, is known to exist.⁷³ Unfortunately he does not give the letter *verbatim* and admits that "the order has been changed, and certain things which belong to knowledge or learning inserted." The extent of Bado's responsibility is therefore uncertain.

Bado's account is as follows:—

In the city of Lima, which is the capital of Peru, the wife of the Viceroy, at that time the Count of Cinchon (those who say it was the Marquis of Mancera are mistaken) fell sick. Her illness was the tertian fever, which in that part is by no means mild but severe and dangerous. The rumour of this illness (as generally happens to important people) which at once became known throughout the city spread to the neighbouring places and reached Loxa. Thirty or forty years have passed I think from that time until now (1663).

A Spaniard, who then held the governorship in that place, was informed

⁷² Bado, S., *Anastasis Corticis Peruviae seu Chinae Chinae defensio* S. B. . . . Genoa 1663. P. 22.

⁷³ Ray in his *Historia Plantarum*, Vol. 3, London 1686-1704, seems to be wrong in stating that Bollus "published a history of the tree (Cinchona) written in Italian."

about the illness of the Countess, and decided to advise her husband the Viceroy by letter. He did so and wrote that he possessed a certain remedy, which he unreservedly recommended, and if the Viceroy would use it, his wife would recover and be freed from all fever. The husband told his wife about this communication, and she immediately agreed. Then, since we readily trust that which we hope will profit us, the Viceroy ordered the man from whom he hoped for help to be summoned without delay, and he was therefore ordered to come to Lima at once, which he did. When admitted into the presence of the Viceroy he confirmed verbally what he had said in the letter, and told the Vicereine to be cheerful and confident, since he was certain she would recover, if she would stand by his advice. Having heard this she decided to take the remedy, and after taking it, to the amazement of all, she recovered sooner than you can say it.

When this was learnt in the City, the people approached the Vicereine by intermediaries, not so much joyfully and congratulatorily, but supplicatingly, begging her to deign to help them, and say, if she would, by what remedy she had at last so marvellously, so quickly, recovered, so that they, who often suffered from precisely this fever could also provide for themselves.

The Countess at once agreed. She not only told them what the remedy was, but ordered a large quantity of it to be sent to her, to relieve the sufferings of the citizens, who often suffered from the fever. Nor did she only order this great remedy the Bark to be brought, but she wished to dispense it to the many sick with her own hands. And the thing turned out so well that, just as she herself had experienced the generous hands of God in that miraculous remedy, so all the needy who took it marvellously recovered their health. And this bark was afterwards called *Countess's Powder*, which in Spanish is *los polvos de la Condeça*.⁷⁴

The story of the cure of the countess, thus related by Bado has become absorbed, almost irrevocably it seems, into the history of Cinchona. Yet the most striking fact that confronts the modern investigator is that not a single contemporary writer other than Bado, not one of the numerous historians of the New World, makes the slightest mention of the event. Although Bernabe Cobo and Antonio de la Calancha (see pp. 429, 440 *supra*), both of whom lived in Peru at the time, described the remedy, and Cobo states that it was already well known in Europe, yet neither of them makes any reference whatever to the cure of the Countess of Chinchon nor any mention of the Governor of Loxa.

The truth of the story has, it appears, never been challenged,

⁷⁴ For original text *vide* Appendix (i).

although Humboldt regarded it as a fable without stating any grounds for his conclusion. Joseph de Jussieu's statement that a Jesuit at Malacatos was the first European to be cured of fever by the use of "Quinquina" in the year 1600,⁷⁵ is unsubstantiated. La Condamine who relates the story of the Countess of Chinchon from Bado also says that he found in a convent library at Loxa a manuscript in which it was stated that the remedy "Quinquina" was in use amongst the Europeans of Lima about the same date, 1600.⁷⁶ Both these authorities regarded "Quinquina" as always indicating Cinchona. In view of the proof already given that the "Quina Quina" described by Espinosa (before 1628) and Cobo (*circa* 1630) was not Cinchona but Myroxylon, and that the latter was then used as a febrifuge, the assertions of the French savants cannot be accepted without suspicion that they had mistaken references to Myroxylon for facts relating to Cinchona.

Before examining the truth of the story of the cure of the Countess of Chinchon, the question of the actual identity of this lady needs to be settled; for owing mainly to the elaborate Memoir on the family of Chinchon written by Sir Clements Markham,⁷⁷ a great deal of error still persists. The heroine of the story is identified by Markham as Ana de Osorio, daughter of the Marquis of Astorga, who married the Count of Cinchon on 11 August 1621.

Markham briefly outlined the story related by Bado, except that without any evidence he definitely dated the cure of the Countess as 1638⁷⁸ in spite of Bado's reckoning that it took place between 1623 and 1633.

It is unfortunate that the English cinchonologist should have failed to discover that Ana de Osorio, Countess of Chinchon, died on the day of the Conception of Our Lord 1625,⁷⁹ three years before the appointment of her husband as Viceroy of Peru on 18 February

⁷⁵ Weddell, H. A., *Histoire naturelle des Quinquinas*. . . . Paris, 1849. P. 15—quoting from J. de Jussieu's unpublished manuscript.

⁷⁶ La Condamine, C. M. de, *Sur l'Arbre du Quinquina*—vide *Mémoires de l'Académie Royale des Sciences* 1738; Paris, 1740.

⁷⁷ Markham, Sir Clements R., *A Memoir of the Lady Ana de Osorio, Countess of Chinchon*. . . . London, 1874.

⁷⁸ Markham, Sir C. R., *op. cit.*, p. 41.

⁷⁹ *Municipal Archives of Chinchon*, File 4.



Don Luis Geronimo Fernandez de Cabrera y Bobadilla

DON LUIS GERONIMO FERNANDEZ DE CABRERA Y BOBADILLA,
FOURTH COUNT OF CHINCHON.
Viceroy of Peru from 1628 to 1639.

1628.⁸⁰ It was his second wife Francisca Henriquez de Ribera whom he married in the early part of 1628 (in February⁸¹) who accompanied him to Peru in the same year as Viceroy. In the Archivo General de Indias, at Seville, there exists the Royal authority, dated from Madrid, 18 February 1628, to the House of Trade at Seville to pass for Peru the Countess Doña Francisca Henriquez de Ribera, wife of the new Viceroy.⁸²

It is unnecessary to delve into the mass of inconsistencies of the historians of the eighteenth and nineteenth centuries concerning the story of the Countess's cure, in consequence of the discovery in 1930, by Miss I. A. Wright on behalf of the late Sir Henry Wellcome, of the official Diary of the Count of Chinchon relating to his term of office as Viceroy of Peru.⁸³

The diary, kept in meticulous detail by his secretary Dr. Don Antonio Suardo, has been most carefully examined for the purpose of this investigation. In sending home to Spain the first instalment of the diary the Count observes that it is "so long and prolix that it will be hard to read." It is crowded with events great and small and pays particular attention to the deaths of prominent persons, and to the illnesses not only of the Viceroy, his family and his staff, but of any citizen of prominence.

It is also unnecessary here to review all the innumerable entries concerning the public and personal activities of the Count and his Countess, as well as other notabilities, which provide a striking panorama of pageantry, interwoven with the routine of daily life. Banquets, Bull fights, Processions, and Celebrations, Religious Festivals, University Assemblies and Orations are intermingled with records of the maladies which befell Courtier and citizen alike.

In this intimate record of the lives of the Count and Countess of Chinchon, one may search in vain for any account of the Countess

⁸⁰ Seville, *Archivo General de Indias*, 139-6-8. *Indiferente General* 512, vol. 1, fol. 72 ff.

⁸¹ *Municipal Archives of Chinchon*. File 5 says, "The Council was called on February 9th 1628 and it was resolved to present congratulations to the Count on the event of his new marriage."

⁸² Seville, *Arch. Gen. de Ind.*, loc. cit., fol. 85.

⁸³ Seville, *Arch. Gen. de Ind.*, 70-2-6 Lima 45. (Photostat copy in possession of the Wellcome Historical Medical Museum, London.)

ever having suffered from fever, but so far as the Count is concerned the diary seems to be one continuous history of his malarial attacks.

During the whole of the eleven years covered by the diary two entries only refer to the Countess having been unwell. On the 26th November 1630, "The Vicereine awoke ill in that her throat was inflamed. The doctors ordered her bled twice. Wherefore his excellency ordered to be suspended" a very elaborate festival planned by the Silversmith's Guild. The next day (27th) "The Countess being better" preparations for the festival were continued, but were again suspended on account of a severe earthquake. The next occasion was on 31st October 1636, when both "The Viceroy and the Vicereine were bled because they were ill with flux and cough on the lungs." But they were at Mass the next day.

Neither of these two disorders could possibly be connected with an attack of Malaria, nor have been the basis of the story associated with the discovery of Cinchona. All through the diary the Countess, save for the two slight ailments referred to, is leading the vigorous, active life of a healthy woman, who owing to the constant indisposition of her husband is called upon to undertake frequent public duties, and participate in numerous functions. She drives out to see processions, entertains officials at the palace, visits religious institutions, watches the games, visits the fleet at Callao, attends banquets (of one of these the 64 courses are recorded) and a vast number of other social activities.

Of the Count, the diary tells a different story. An original letter dated 25th March 1629 from the Count to the Crown authorities in Madrid announces that he landed at Callao (the port of Lima) on December 18th 1628, and made his entry into la Ciudad de los Reyes (Lima) in state on 14th January 1629, where he was received as Viceroy.⁸⁴

The Countess having travelled overland on account of her condition, stayed at Lambayaque where her son was born, and did not reach Lima until the night of April 19th 1629.⁸⁵

The Diary begins on 15th May 1629 and a summary of the extracts relating to the illnesses of the Viceregal family is as follows:

⁸⁴ Seville. *Arch. Gen. de Ind.*, 70-2-3; Lima 42.

⁸⁵ Zegarra, C. C., *Revista Peruana*. Lima, 1879.

1629-30

February 5. His excellency is much troubled with *mal de hijada* (pain in the side) and on the 6th was bled, which relieved him.

February 10. The Viceroy being still much annoyed by his illness, and others which followed developing from it, he summoned a consultation of doctors, and it was decided he should be bled again. This was done, whereupon Our Lord was pleased that improvement should follow.

1630

July 2. The Viceroy felt ill . . .

July 3. His Excellency was worse and in pain—the doctors ordered him bled.

July 5. The doctors ordered the Viceroy bled again—he improved.

July 12. By order of the doctors, His Excellency took a purge and was quite well whereat all the city rejoiced greatly.

November 4. His Excellency passed a bad night, with pain in his side (*dolor de hijada*) which was severe; but God was pleased there should be no further development . . .

November 26. The Vicereine awoke ill in that her throat was inflamed. The doctors ordered her bled twice. Wherefore His Excellency ordered suspended (an elaborate festival planned by the Silversmiths' Guild).

November 27. The Countess being better (preparation for the festival continued).

December 6. (The Countess is a prominent and gracious figure at the Silversmiths' festival and bull fight).

December 12. His Excellency felt ill of wind (of the bowels) and remained in bed, but God granted that he was better shortly.

1630-31

February 15. His Excellency the Count being somewhat indisposed with a slight fever, the doctors ordered him to bed.

February 17. His Excellency was still unwell and the doctors ordered him bled again. (He felt better).

March 12. His Excellency felt ill and therefore the doctors ordered him bled; (Improvement followed).

1631

April 29. His Excellency being worse of an intermittent fever the doctors ordered him bled in the afternoon. Nevertheless he passed a bad night . . .

May 1. His Excellency was ill and could not sign dispatches.

May 5. The doctors found that the intermittent fevers with which His Excellency is suffering were increasing. This caused great anxiety and grief. It was ordered that a consultation of four doctors be held twice daily.

and that the *proto medico* Dr. Melchos de Amusgo, who is ill in his house, be kept informed.

May 6. (Prayers offered in every Monastery and Nunnery in the City).

May 7. His Excellency felt *worn out by chills and fevers* and, as became so Christian a prince, desired to make ready in time, and so at five a. m. confessed and received the Host from P. Diego de Torres of the Jesuit Order, and having rested a little before he ate, summoned the Countess and delivered to her a little coffer, with pearls and jewels and his will therein sealed, and commended his son to her in words so tender they melted not only the Countess, but also all who stood by, into tears . . .

May 9. Our Lord granted that the Physicians should find a very notable improvement in His Excellency's illness and that in this day the usual rise in temperature, which was feared, did not occur, which occasioned particular pleasure and happiness in all the Court.

(On May 13 the Count is able to attend to business, and on May 18th he is out).

May 25. His Excellency *was ill with an attack of chills and fever* therefore the doctors ordered him bled.

May 29. His Excellency—*indisposed*.

June 5. This day his Excellency was indisposed for in the afternoon *the fever returned which is becoming quartan*.

June 7. His Excellency—*too ill*—(to make inspection of jails).

June 16. His Excellency *awoke with fever*—(but out again on the 19th).

September 27. His Excellency felt suddenly ill—(out on 29th).

October 29. Feeling somewhat ill—(out on November 2nd).

1632

May 11. His Excellency *awoke with a fever*.

May 16. His Excellency *awoke quite ill of intermittent fever*.

May 19. —free of his fevers, whereat all the Court is very pleased and glad.

May 29. The Count is still convalescent and thin—

August 17. His Excellency feeling indisposed was bled.

October 6. His Excellency bled because he had passed an uneasy night.

October 8. —bled a second time.

1632-33

February 9. His Excellency —*awoke with chills and fever*.

February 18. —still indisposed—bled again.

February 22. The doctors ordered His Excellency to take a purgative to finish expelling the Evil humours which keep His Excellency indisposed.

1633

May 27. His Excellency indisposed, his leg hurt in a fall.

All along there is frequent mention of the religious and social activities of the Countess, showing that she enjoyed good health.

July 29. His Excellency was ill with pain in the stomach. Fearing it arose from superabundance of Blood (!!) the doctors ordered him bled.

July 30. The doctors ordered the Count Viceroy bled again.

August 1. His doctors ordered a purge.

September 1. —his throat badly inflamed, in consequence of too much blood . . . bled twice in two hours.

September 6. The Viceroy named Dr. Juan de Vega, His Excellency's personal physician, *proto medico* of this realm.

1633-34

January 24. The Viceroy being ill of fever, which appeared to be intermittent (tertian), the doctors ordered him bled.

January 26. The doctors ordered the Count Viceroy bled again. In the afternoon his fever rose and he had a somewhat violent chill, which caused worry in all the Court.

January 31. —left his bed, the fever having left him.

At this point there is a marginal note which says ". . . apparently it is not of such small details nor matters of this quality that His Majesty (of Spain) has ordered the Viceroys and Governors to furnish account . . .".

But the Diary continues in the same meticulous manner:—

1634

July 11. His Excellency having had a headache (since the 7th) . . . his doctors ordered him to bed.

Throughout 1634 and 1635 the Countess is apparently well, spending days in the country, attending Comedies, giving Banquets, visiting the Fleet at Callao, watching processions from the Palace balcony, entertaining, etc. A marginal note suggests that the Diary was ordered to be discontinued by the Authorities in Spain. It was, however, continued.

1635

October 25. The Viceroy was ill—the doctors ordering him bled, and the next day a tooth was extracted.

November 22. Viceroy much troubled by toothache, the doctors ordered him bled.

December 24. Viceroy—somewhat indisposed.

December 26. Viceroy ordered to take a purge because he found it difficult to move his feet and hands and there was some fear of gout.

1635-6

January 1. Viceroy still ill, and in bed.

January 7. —Viceroy—still indisposed.

March 24. Viceroy awoke with his throat infected, and the doctors ordered him bled at once.

March 25. —the Viceroy was still suffering from the said attack—bled the second time.

1636

April 18. Don Francisco, the *Viceroy's only son* was very ill of a fever and occasioned His Excellency and all the Court alarm.

April 19. His Excellency called to consultation the best doctors in the City and it was decided to bleed the patient, whereupon he improved. On the 22nd he was bled again.

June 5. Viceroy ill with pain in the stomach and remained in bed.

On June 8th the Count and Countess received congratulations that their son, Don Francisco, has been created Marqués de San Martín de la Vega. In accordance with vows they had made the Count and Countess went to the Franciscan Monastery on July 7, to the Church of Our Lady of the Rosary on July 8, to the Church of St. Augustine on July 9, and to other Churches on July 10, 11, and 12, at all of which votive masses were said in gratitude for the recovery of their son. The diary continues:—

1636

October 13. His Excellency was indisposed with headache and an attack of fever.

October 31. The Viceroy and the Vicereine were bled because they were ill with flux and cough on the lungs. (Well the next day).

1636-37

January 27. His Excellency ill with gout.

1637

April 28. His excellency awoke with fever. A consultation of doctors . . . ordered him to be bled.

April 29. —bled a second time because the fever was pronounced to be tertian.

May 15. Viceroy suffered an attack of gout.

May 17. His Excellency bled again . . . to lessen the severity of the pain of the gout. (Better on the 20th).

September 1. His Excellency fell ill with an attack of "sores in the throat" which made it necessary to bleed him several times hastily . . .

1638

June 2. His Excellency was to have gone to the Cathedral on the eve of Corpus Christi but did not go as he felt ill.

June 3. His Excellency went to the celebration of the festival . . . on Corpus Christi, and after he had accompanied the procession through the usual street . . . where the play is presented, he returned to the Palace, *for he had fever* (on the 13th he was well and out).

October 21. His Excellency fell ill . . . he had *developed fever*, whereof he was bled twice.

October 23. He was worse. A consultation of the doctors of this city was held, for the disease was pronounced enteric . . . and with it continuous fever.

October 28. . . . His Excellency no better (the Countess ordering many masses for the Viceroy's health, and distributing candles and alms).

November 8. . . . somewhat better, and from this day he steadily improved, having in his illness been in great danger of death.

Throughout 1637 and 1638 the Countess and her son continue to figure prominently in social activities with a frequency that indicates good health. The diary is conspicuous for the care with which it records every occurrence of ill-health in the Viceregal family, however small. There is not the slightest suggestion that the Countess of Chinchon, heroine of the story with which Bollus and Bado illuminated the discovery of Cinchona, ever suffered from malaria on any occasion. It is inconceivable that in a diary of this character, in which the activities of the Viceregal family were of first importance, there should pass unnoticed such events of official and public interest as:—

- (a) A serious illness of the Countess with malarial fever.
- (b) The discovery of an effective remedy against a disease that was defying all the skill of the medical profession and was rife throughout the civilized world.
- (c) The public distribution of such a remedy by the gracious lady herself, gratis, to the poor of the city of Lima.

Yet the story related by Bado and his followers would have us believe that the Countess was stricken almost unto death by a fever so virulent that the Court Physicians were powerless to alleviate her suffering. La Condamine, who draws many of his facts from Bado and bases others upon information gleaned during his expedition to Peru, goes so far as to say that the remedy gained notoriety on "the occasion of a stubborn tertian fever from which the Countess of Chinchon, Vicereine of Peru, could not for many months be cured."⁸⁶ We have seen recorded in the diary that when both the Count and his son were victims of malaria not only is the fact noted, but also the treatment by phlebotomy performed by the physicians, several times on occasions, and when the attack was severe, that prayers were offered in the churches. Such an event as La Condamine describes, had it happened to the Countess, could therefore hardly have escaped the inquisitive mind of Dr. Don Antonio Suardo, the Count's diarist. Nor could such news as the discovery of so "miraculous" a remedy have passed unrecorded by Suardo, whose ear for gossip was so conspicuously receptive that the story was far more likely to have found its way into his pages if untrue, than to have been omitted if it were a fact. Even the Viceroy himself writes that he does not guarantee the complete accuracy of the diary because the author has gone into such detail and obtained information from so many different sources.⁸⁷

Nor, had the Countess distributed the remedy to the poor from the Jesuit College of St. Paul,⁸⁸ or caused such to have been done, would Suardo have omitted to mention the fact, for he seems to have been particularly fond of recording official visits to religious houses, no doubt on account of his being a cleric himself.

One is, therefore, forced to the conclusion that, notwithstanding the prominent place it has held in the history of medicine, the story of the cure of the Countess of Chinchon as told by Bado and his imitators has no foundation whatever in fact.

The Viceroy's diary ended on May 30th 1639, but in the meantime the Count of Chinchon had, by a dispatch⁸⁹ dated 15th April 1638

⁸⁶ La Condamine, C. M. *de. op. cit.*

⁸⁷ Seville, *Arch. Gen. de Ind. Indiferente General*. 512: 11.

⁸⁸ *Catholic Encyclopedia*. New York, 1910. Vol. 8, p. 373.

⁸⁹ Seville, *Arch. Gen. de Ind. Indiferente General*. 512: 11.

from Madrid, been granted leave to return to Spain. He was appointed to rank as Captain-General of the Armada by which he sailed, and "because it is proper that he be respected in conformity with the offices in which he has served me (the King)" he was appointed also to preside over the *Audiencia* of Panama whilst waiting there for the departure of the fleet.

Chinchon's successor, the Marquis of Mancera, did not, however, arrive at Callao until 25th November 1639. On December 18th following he entered Lima in state and assumed office;⁹⁰ presumably the Count of Chinchon and his family then left for Spain.

Inseparably linked with the story of the cure of the Countess of Chinchon are certain other "facts" which have passed into the history of Cinchona:—

1. That the Countess returned with her husband to Spain and there distributed the remedy amongst the vassals of the Chinchon estate.
2. That she also sent a quantity of the bark to the University of Alcala de Henares, where in 1639 it was used in the treatment of Dr. Michael de Barreda, Professor of Theology.
3. That her physician Dr. Juan de Vega also returned to Spain with a consignment of the bark which he sold at Seville at the price of 100 Reales for a pound.

All these statements which are still unquestionably accepted by historians of Cinchona can now be unequivocally disproved.

Regarding the return of the Countess of Chinchon to Spain, Bado makes no mention of this fact, but Markham in the work already referred to declares that on her arrival she "administered Peruvian bark to the sufferers from tertian agues on her lord's estates, in the fertile but unhealthy *vegas* of the Tagus, the Jarama and the Tajuna. She thus spread blessings around her, and her good deeds are even now remembered by the people of Chinchon and Colmenar in local traditions."⁹¹

⁹⁰ Seville, *Arch. Gen. de Ind.*, 70-2-11, Lima 50. Original letter from Mancera to the Crown dated 29th May, 1640.

⁹¹ Markham, C. R., *op. cit.*, pp. 45, 62, 71. The author claims to have received this "information from Don Hippolito Serrano, Regidor of Chinchon."

How utterly unfounded is this sentimental story may be seen from the fact that the Countess of Chinchon, wife of the Viceroy of Peru, never returned to Spain at all—*on the journey home she died and was buried at Carthagena, Colombia, on the 14th January 1641.* There are two reliable authorities for this information.

In the *Archivo General de Indias* is a dispatch addressed to the Crown dated 28th February 1641 from Gomez de Sandoval, commander of the fleet which brought home the Count of Chinchon. It says:—

I arrived at Carthagena on my return (from Puerto Belo) on January 13 with the greater part of my people sick, and here (Carthagena) and at Puerto Belo a lot of people died . . . and the day after having arrived at Carthagena the Condesa de Chinchon died.⁹²

The circumstances suggest an epidemic of which the Countess may have been a victim.

Confirmatory evidence is forthcoming. In the Archives of the Order of Franciscan Friars at Lima (Reg. 4, No. 2, doc. No. 29) is an edict issued on 15th May 1641 by Alonso Manrique, Provincial of the Order from which the following is an extract:—

By these presents let it be known unto you how, on the 14th January of this year 1641, in the City of Carthagena of the Continent of this Kingdom, Our Lord gathered unto Himself, Donna Francisca Henriquez de Ribera, Countess of Chinchon, and a Patroness of our Holy religion.⁹³

The Count sailed with Gomez de Sandoval aboard the Vice-admiral as the flagship leaked, arriving in the bay of Cadiz on 30th June 1641.⁹⁴ Therefore, if the bark was brought to Spain and distributed among the Chinchon vassals it certainly was not the Countess who did so. It is just possible that these things may have been done by the Count, but if so it clearly was later than June 1641.

This last mentioned date at once answers the second problem. If, as Bado quotes Dr. Villarobel as having said, it was in 1639 that Dr. Michael de Barreda was cured of fever with Cinchona, it was not

⁹² Seville, *Arch. Gen. de Ind.*, 141-1-18. *Indiferente General* 762.

⁹³ Zegarra, C. C., in *Revista Peruana*, Lima 1879.

⁹⁴ *Arch. Gen. de Ind.*, 141-1-18. *Indiferente General* 762. Dispatch from the Council for Indies to His Majesty dated 3rd July, 1641.

with bark brought to Spain by the Count of Chinchon who did not arrive until two years later. Neither was it the Countess who brought home the bark and sent some to the University of Alcalá de Henares as Markham contends.

As for the third point that the Viceregal physician, Dr. Juan de Vega, also came home to Spain with large quantities of the bark and "was selling it in Seville at one hundred reales a pound,"⁹⁵ the falsity of this story is evident from the fact that there is ample proof that Juan de Vega never returned to Spain, but remained in occupation of his Chair as Professor of Medicine in the University of Lima.

In the *Archivo General de Indias* at Seville is a collection of documents relating to Lima University from 1571-1699. De Vega must have remained in Peru, for his signature is continually appearing on documents after the departure of his patron the Viceroy. In 1650 he is still signing⁹⁶—by this time his signature is feeble—although this seems to be the last occasion on which he did so.

The evidence now furnished strongly suggests, (1) that the story of the Cure of the Countess is a fable, and proves (2) that she never introduced the remedy to Europe because she died before she left the New World. (3) It also proves that the Viceregal physician Dr. Juan de Vega did not return to Spain, and consequently neither brought a consignment of the bark nor sold it in Seville. Who then first introduced Cinchona into Europe?

In regard to this point, the early authorities are the source of much confusion. For the most part their information is of "hear-say" character seldom supported by evidence. Although we are still unable to furnish an absolute solution of the mystery, it is possible to clarify the problem by the elimination of a great deal of fiction that has clouded the issue for centuries. Chifflet⁹⁷ in 1653 and Sturm⁹⁸ in 1656, both writing before Bado (1663) mention nothing of the story of the Chinchons, but assert that the bark was first introduced into Belgium by the Jesuits. Unfortunately they do not say when it first

⁹⁵ La Condamine, C. M. de, *op. cit.*

⁹⁶ *Arch. Gen. de Ind.*, 71-4-8, Lima 337. Dispatch from University to the Crown in 1650.

⁹⁷ Chifflet, *op. cit.*

⁹⁸ Sturm, R., *op. cit.*

arrived, but Chifflet says it came direct from Peru, brought by Michael Belga. Neither does Brunacio⁹⁹ in 1661 speak of the Viceroy or his wife, but says that the bark "was first brought from the kingdom of Peru to Rome in the year 1650 by the Fathers of the Society of Jesus, and received by Cardinal de Lugo." Authorities later than Bado, such as Sir Robert Talbor, Nicolas de Blegny, and others, are hardly worth consideration. Talbor merely states that "the Jesuits were the first that brought it from America"¹⁰⁰ whilst de Blegny says that the bark was first brought from America by five Jesuits in 1650.¹⁰¹ But before this date Bollus had conveyed the bark to Cardinal de Lugo in 1649,¹⁰² although this does not prove that Bollus's consignment was the first to reach Europe. Bado's correspondent Dr. Villarobel says, however, that "the first to bring the Bark was actually the Count of Chinchon," and subsequently adds that the remedy "is found today (c. 1663) at the Count of Chinchon's, which his father the Viceroy of Peru in 1632 had brought, and by whose bounty not once only I obtained it for the use of the sick . . . about 30 years' antiquity are found in the bark."¹⁰³ As has been proved, the Count did not return to Spain until 1641 so that Villarobel's statement that he brought it in 1632 is rendered suspect, especially as he also quotes Bollus as saying that "according to the views of others the first conveyors of the Bark were the R. R. Adm. Fathers of the Society of Jesus."¹⁰⁴

The earliest printed work having reference to Cinchona is invariably stated as being the *Vera Praxis* . . . of Dr. P. Barba, Physician to the Court of Madrid and Professor of Medicine at Valladolid, published in 1642;¹⁰⁵ but Rompel has conclusively shown that the work in question has no reference to Cinchona at all.¹⁰⁶ In 1905, however, Rompel disclosed the fact¹⁰⁷ that he had discovered in the

⁹⁹ Brunacio, G., *op. cit.*

¹⁰⁰ Talbor, Sir R., *The English Remedy*. . . London, 1682, p. 1 ff.

¹⁰¹ Blegny, N. de, *Remedium Anglicum pro Curatione Februm*.

¹⁰² Bado, S., *op. cit.*

¹⁰³ Bado, S., *op. cit.*, p. 202.

¹⁰⁴ Bado, S., *loc. cit.*

¹⁰⁵ Waring, E. J., *Bibliotheca Therapeutica*, London (New Sydenham Soc.), 1878, Vol. I, p. 337; also *Edinburgh Med. Surg. Jl.*, xxvii, 1827, p. 123.

¹⁰⁶ Rompel, J., *op. cit.*, p. 47 ff.

¹⁰⁷ Rompel, J., *op. cit.*, p. 58 ff.

University of Louvain a rare work by Dr. Herman van der Heyden, published in 1643, with an addition dated 1645,¹⁰⁸ in which Cinchona is unquestionably referred to in the earlier part of the book under the name of *Pulvis indicus*, as having been used for tertian and quartan fevers. This name for Cinchona was certainly very common about 1660 and in 1663 Amman places it first among ten synonyms.¹⁰⁹ Sturm also uses the same name at the beginning of his work.¹¹⁰

Rompel argues that it is no matter for surprise that so early a mention of Cinchona should occur in Belgium remembering the close association of that country with Spain at that time. He is convinced that the bark came to Belgium from Spain some time between 1630 and 1642—certainly not later, as van der Heyden's book proves. But statements are also encountered in Chifflet and others that the bark was first brought direct from Peru to Belgium by Michael Belga, Physician to the Marquis of Mancera, Chinchon's successor as Viceroy of Peru. That Michael Belga could not have done so is apparent from the fact that he was with his master in Lima from 1641 to 1650, previously to which he had not been in Peru; so that he could not have brought the bark to Belgium until 1650, eight years after it was mentioned as having been used by van der Heyden.

Another common assertion is that the Bark was first brought to Europe by Jesuit Bartholome Tafur when attending a Congregation of his order.

Tafur was appointed Procurator-General of the Peruvian Province in 1642, and could not have arrived in Europe before the end of 1644—again after the publication of van der Heyden's work.

The evidence given above, especially the fact that Cinchona was used in Belgium by van der Heyden as early as 1642, therefore eliminates certain individuals who have by some authority or another been credited with the introduction of Cinchona into Europe:—

¹⁰⁸ Heyden, Herman van der, *Discours et advis sur les flus de ventre douloureux*. . . . Gand 1643, Et l'Addition 1645, p. 97.

¹⁰⁹ Amman, P., *Antiquarii Peruviani historia*. Resp. C. Rothmann. Lipsiae 1663; cap. I, § 3.

¹¹⁰ Sturm, R., *op. cit.* Part I, § 1.

The Countess of Chinchon,
 Dr. Juan de Vega,
 Fr. Bartholome Tafur,
 Dr. Michael Belga,
 Marquis of Mancera,

the Countess because she died before leaving America; de Vega in that he never left Peru; Tafur because he could not have returned to Europe before the end of 1644; Belga because he did not return from Peru before 1650; and Mancera for the same reason.

This seems to narrow the issue considerably. The Count of Chinchon may have been the first to bring a consignment of the remedy on his return in 1641, a part of which could have been transported to Belgium in time for van der Heyden to have become acquainted with its virtues. In fact, Villarobel (in Bado's work) does say in reference to the Count of Chinchon, and his successor the Marquis of Mancera, that "each Prince when he first entered Madrid (on return from Peru) dispensed a great quantity of the Powder for the cure of the sick."¹¹¹ Or it may have been brought to Europe by some unidentifiable member or members of the Society of Jesus. It has been claimed that it was first brought by Bernabe Cobo and that

In his capacity of procurator of the Peruvian province of his Order, he brought back the bark from Lima to Spain, and afterwards to Rome and other parts of Italy in 1632.

Rompel, who makes the statement,¹¹² gives no proof, without which one is inclined to hesitate to accept the claim especially in view of Cobo's own remarks.

In setting forth his reasons for compiling his *Historia del Nuevo Mundo*, Cobo says in the Prologue:—

The first is on account of the many years which I have lived in the Indies—not less than fifty and seven, from the year 1596, passed in them, until the present 1653 . . .¹¹³

¹¹¹ Bado, S., *op. cit.*, p. 202.

¹¹² Rompel, J., in *Catholic Encyclopedia*, New York, 1910, sub. art. "Jesuits' Bark."

¹¹³ For original text *vide* Appendix (j).

The phraseology of this statement, specially in the absence of any authentic record to the contrary, admits of no other interpretation save that he remained in America during the whole of fifty-seven years. "I have lived in the Indies *not less* than fifty and seven years" says Cobo—"from the year 1596 . . . until the present, 1653." Had he passed an interval of several years in Europe as Rompel suggests, the statement in Cobo's Prologue would not have been strictly accurate.

The facts regarding the introduction of the remedy to Europe may yet come to light. Although the evidence now offered does not provide a solution of the problem, it should clear away some of the difficulties which the task has hitherto presented.

CONCLUSIONS

1. That the first wife of the Count of Chinchon, Ana de Osorio, died before his appointment as Viceroy of Peru. It was his second wife Francisca Henriquez de Ribera who accompanied him to Peru when he assumed office.
2. That the absence of any mention of the remedy or of any serious illness of the Countess in the official Diary of the Count of Chinchon strongly suggests that the romantic story of the cure of the Countess by Cinchona is no more than a fable.
3. That she never returned to Spain, but died at Carthagena, Columbia, on 14th January 1641, and so could never have brought the remedy to Europe, nor distributed it to the poor of her native country.
4. That the following persons who have also been credited with the introduction of Cinchona into Europe could not have done so:—

Dr. Juan de Vega
Fr. Bartholome Tafur
Marquis of Mancera
Dr. Michael Belga.

5. That the earliest reliable descriptions of Cinchona *by persons living in Peru* are those of Antonio de la Calancha (*ante* 1633) and Bernabe Cobo (between 1630 and 1653).

6. The earliest mention in European literature of the use of Cinchona occurs in Belgium, in Herman van der Heyden's work in 1643, so that the introduction of the remedy must have taken place before that date. Antonio de la Calancha *ante* 1633 stated that its use had "produced miraculous results in Lima." The Count of Chinchon did not arrive in Europe until 1641, and although he may have brought with him a consignment it is hard to believe that the people of Lima, cognizant of the value of this new febrifuge since 1633 or earlier for eight years or more had neglected to send any of it to Europe where malaria was rife. It may be reasonably supposed that if Calancha in 1633 could describe the remedy as "miraculous" some of his fellow ecclesiastics, or merchants, returning home to Spain or Italy would have been quick to take with them so profitable an investment as a supply of a remedy Europe was craving for. Throughout the 17th century a vast trade was done by merchants introducing to Europe medicinal substances from the New World, and it is unlikely that Cinchona once its qualities were known in Lima had to wait long for its introduction to Europe. This event it may be assumed therefore took place somewhere round about 1633.
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APPENDIX

ORIGINAL TEXTS

- (a) La Condamine, C. M. de. *Mémoires de l'Académie Royale des Sciences*. Paris, 1738. pp. 226-243.

"J'ai trouvé dans un ancien Dictionnaire de la Langue *Quichoa*, c'est ainsi qu'on nomme celle des anciens *Pérouans*, du temps des *Ingas*, imprimé à Lima en 1614, le mot *Quina ai* aujourd'hui hors d'usage & inconnu des Naturels mêmes du pays, dont la Langue s'est fort altérée par le mélange de l'Espagnol, ce mot est traduit dans le Dictionnaire par le mot Espagnol *Mantelilla India*, espèce de mante ou de cape dont s'enveloppoient les Naturels. Comme la Langue *Quichoa* est fort peu abondante en termes, & que pour suppléer à cette disette elle n'a gueres de mot dont la signification ne s'étende par métaphore à diverses autres, on peut présumer avec assés de vrai-semblance, que *Quina ai*, qui s'entendoit ordinairement d'un manteau, pouvoit aussi signifier écorce quand el étoit question d'un arbre, ou du moins, avoir eu anciennement cette signification; je compte pour rien la petite différence dans la terminaison si ordinaire aux mots qui passent d'une Langue à une autre; . . ."

- (b) *Confessionario para los curas de Indios*, Lima 1583; cap. II. "Los ritos del los Indios."

"De los Sacrificios y offrendas"

"Es cosa comun entre Indios adorar a la tierra fértil, q̄ es la tierra q̄ llaman Pachamama, o Camac pacha, derramando chichaenella, o coca o otras cosas, para que les haga bien.

Y para el mismo efecto en tiempo de arar la tierra, barbechar, y sembrar y coger mayz, o papas, o quinua, o yucas, y camotes, o otras, legumbres y frutos de la tierra suelen ostrecerle sebo quemado, coca, cuy, corderos, y otras cosas; . . ."

- (c) Cobo, Bernabe. *Historia del Nuevo Mundo*, MSS. completed at Lima, 1653.

"De la Quinua"

"La Quinua es un árbol del tamaño de un Olivo y de ahí para abajo hasta no crecer más de un estado; tiene les ramas y tronco rojos, con la corteza muy delgada, que con facilidad se despide . . . Es árbol tan fuerte en resistir el rigor del frío y heladas como el Quishuar; y así, sólo estas dos castas de árboles nacen en los rigurosos páramos del Perú, especialmente en las provincias del Callao. Hacen de la Quinua muy buen carbón, que es bien necesario donde tanto frío hace."

- (d) Ruiz, Don Hipólito. *Relación del viaje hecho a los Reynos del Perú y Chile* . . . ed. by R. P. A. J. Barreiro, 1931. p. 93.

"Atravesando por varios Ingenios de Minerales y Lagunas bexamos a la Quebrada de la Quinua nombre adquirido del arbol llamado *Quinnuar* ô como otros pronuncia *Quinhuar* que abunda en ella y sirve de no poco auxilio a los Mineros del Cerro de Yauricocha para los Edificios y Ingenios y para el fuego, por ser madera fuerte y de resistencia. De este arbol establecimos el género *Polylepis*, nombre tomado de la propiedad que tienen sus cortezas de desprenderse en muchas capas delgadas a manera de vitelas ô de papeles de color melado."

- (e) Espinosa, Antonio Vasquez de. *Compendio y Descripción de las Indias Occidentales*. Part II, Book V, Chap. 26 (written before 1628). Vatican Library. Barberini Collection MSS. 3584.

"el arbol de la quinaquina cria tambien otras vaynas a modo de las algarrobas . . .

Del arbol quinaquina se saca una resina de color de higado muy odorifera y saludable, con su sahumerio se consumen frialdades, y reumas de caueça, con esta rezina mezclada con azeite se curan heridas y llagas, y el mismo efeto tiene el azeite que se saca de sus pepitas, y es con mas efficacia el arbol quinaquina es muy hermoso, y su madera muy odorifera, y fuerte, el color de su madera blanco y leonado a vetas."

- (f) Cobo, Bernabe. *op. cit.*

"*De la Quina-Quina*"

"Quina-Quina llaman en el Perú á un árbol grande y hermoso como un mediano olivo; la hojo del tamano y talle que la del limón ceuti; el tronco en algo colorado, resinoso y aromatico. Es árbol caliente en el segundo grado, estiptico y seco y de suave olor. Echa unas pepitas por semilla del tamaño de almendras, de color amarillo y de sustancia oleaginosa, que con fragancia, huelen amigablemente; son asimismo calientes y estipticas en el segundo grado, y secas en más del primero. Sajando el tronco y ramas destila una resina olorosa que congela tanto, que se muele en polvos y queda de color negro claro le cual es caliente y más seca que las pepitas.

Nace este árbol en la tierra caliente de la provincia de los CHARCAS en el Perú. Si con su corteza se limpia de ordinario la dentadura la aprieta y conforta; y el palo raspado y cocido con Polipodio, hojas de sen y anís, y el cocimiento tomado en ayunas algunas mañanes, desopila el estómago, higado y bazo mundifica y limpia la vejiga. Las hojas majadas y puestas sobre las heridas frescas, las desecan y juntan, y el cocimiento dellas con salmuera, hojas de *Chilca* y *Molle*, deshinchas las piernas gotosas.

De las pepitas de este árbol se hace un aceite maravilloso para toda herida fresca, el cual se usa mucho en Potosí y hácese desta manera:—majadas cuatro onzas destas pepitas, se echan en la cuarta parte de un cuartillo de vino añejo por espacio de dos horas, y luego se echa todo en dos libras y media de aceite, y á fuego manso cuece hasta que se consume el vino; y quitado del fuego y frío se cuele y se vuelve á la olla ó cazo, y se añade una libra de trementina común, y con ella da un hervor no más; y apartado del fuego, se le echan de polvos de incienso y de mirra, de cada cosa onza y media, sutilmente molidos, y se menean para que se incorporen; y tapado el vaso, se guardá; y hace maravillosos effectos.

Damás desto, sahumandose así con las pepitas como con la resina, se quiten los dolores de cabeza. Las pepitas tostadas y tomadas con vino son contra el dolor de ijada y ventosidades, y majadas, mezclades con polvos de la resina y todo ello cocido con vino con un poco de la resina de *Molle*, incienso y miel de abejas, aprovecha el cocimiento, después de colado, contra las llagas sucias y cavernosas, porque mundifica y deseca con suavidad.

La resina sutilmente molida y hervida con aciete común ó con tocino ó manteca, junta las heridas frescas; y el polvo echado sobre la herida, atrae cunata humedad tiene y la deseca.”

(g) Cobo, Bernabe. *op. cit.*

“*Del Bálsamo*”

“El árbol que destila el Bálsamo en estas Indias no es de sola una especie, sino de tres ó cuatro. Es este licor semejante el *Bálsamo* de Siria, y no inferior á el en olor y facultades. La una especie de árboles que lo dan y de mayor grandeza, nace en la diócesis de Guatemala, á donde yo lo vi, y en otras tierras calientes; crece más que un Moral, y hace un tronco grueso y de madera olorosa, y tan recia, que sirve en los usos que requieren madera muy fuerte, como es para ejes de ingenios de azucar y otros semejantes.

Las hojas son como de Almendro, algo mayores y mas redondas y agudas; las flores amarillas en los extremos de los ramos al principio en forma de largos bolsillos, con cierta simiente blanca que inclina á color amarillo.

Sajardo el tronco deste árbol, destila el licor que llamamos Bálsamo, de color de arroyo, rojo tirante á negro, de sabor agudo algo amargo, de olor vehemente, pero gratisimo. Sécase también este mismo licor de otra manera, que es cociendo en agua los renuevos y ramos tiernos picados menudemente, y cogiendo con un vidrio el licor que nada sobre el agua. No es tan bueno este segundo como el primero, pero el uno y otro son buenos para sahumerios y para curar infinitas enfermedades. De su semilla se saca también un aceite muy provechoso.

El segundo árbol que destila Bálsamo es de mediana grandeza; el tronco no á mas grueso que el muslo, de madera solida y olorosa, tiene las hojas poco mayores que un real; la flor es pequeña y blanca; la fruta semejante a las bayas del laurel. Sacase el licor deste árbol de sus cortezas remojadas por via de distilación.

El árbol de que sacan el Bálsamo en la isla Española se dice *Coaconax*; es del grandor y hechura de un Granado, no muy agradable al paracer; tiene uno, dos y tres piés como el Granado, y en la hoja también se la parece, salvo que la tiene menor; pareciendo en el tronco que está seco, y las hojas que están verdes; no have copa, sino que las ramos suben derechas cada una por si. Alumbra se madera como tea y da buen olor de si. Sácase el Bálsamo por incision sajendo el tronco del árbol, y también cociendo y exprimiendo las hojas.

En el pueblo de Tolú, diócesis de Carthagená, se saca también Bálsamo de un árbol de la grandeza de un granado, y este Bálsamo y el primero, son los más preciados, si bien difieren en que el primero es liquido como arrope, y éste de Carthagená cuajado y duro, que se muele en polvos."

(h) Cobo, Bernabe. *op. cit.*

"De árbol de calenturas"

"En los términos de la ciudad de Loja, diócesis de Quito, nace cierta casta de árboles grandes, que tienen la corteza como de canela, un poco más gruesa, y muy amargo; la cual, molida en polvos, se da a los que tienen calenturas y con sólo este remedio se quitan. Hanse de tomar estos polvos en cantidad del peso de dos reales en vino ó en cualquiera otro licor poco antes que dé el frio. Son ya tan conocidos y estimados estos polvos, no sólo en todas las Indias, sino en Europa, que con instancia los envían a pedir de Roma."

(i) Bado, Sebastiano. *Anastasis Corticis Peruviae*. Genoa, 1663. Caput II, Liber Primus, pp. 22-24.

Aegrotabat fortè in Ciuitate Limensi, quae est Metropolis Regni Peruviae, Vxor Proregis, qui tùm temporis erat Com. del Cinchon (falluntur qui Marchionem de Mancera fuisse dicunt) eratque morbus eius Tertiana febris, quae febris in ea Regione nedum inquilina est, sed immitis, & periculi plena. Rumor huius aegritudinis (vt sit de Magnatibus) per Vrbem statim vulgatus, ad finitima quaeque loca peruasit, Loxamque vsque tenuit. Fluxerint, puto, ab eo tempore, ad id temporis, triginta, vel quadraginta anni.

Praefecturam tùm agebat eo loci Hispanus homo, qui de Comitisiae aegritudine certior factus, deliberauit per Litteras maritum Proregem admonere, quod postea fecit, arcanis scribens, sibi esse Remedium quoddam, quo si vti voluisset Prorex, sponsor indubius ei erat, conualituram

eius Vxorem, febrique omni liberanda. Admonuit de hoc nuncio Vxorem maritus, quae statim annuit (& vt facile credimus, quae nobis profutura speramus) sinè mora iussit acciri hominem, à quo suppetias sperabat, iussusque est ideò, vt nil tempori dato, Limam se statim conferret, quod ipse peregit; coramque admissus, quae scriptis dixerat, verbis quoque confirmavit, rogans Proreginam, vt bono esset animo, & fidenti, certoque sciret se se conualituram esse, siquidem suo consilio stetisset. Quibus auditis, deliberatum est de sumendo Remedio; quod sumpsit, & mirum dictu, dicto citiùs conualuit, stupentibus omnibus.

Vt id rescitum est à Civitate, non tàm laeta & gratulabunda ad eam accurrit per internuncios, quàm supplex quoque adiit Proreginam, vt opem sibi ferre dignaretur, diceretque, si liberet, quo tandem Remedio tàm citò, tamque mirè conualuisset, vt sibi quoque prospicere posset, perindè ea febris, tàm saepè laboranti.

Annuit statim Comitissa, nec Remedium tantùm dixit, quàm ingentem eius copiam ad se transmitti iussit, vt sic Ciuitati, ea saepè febris laboranti, opitularetur. Nec tàm deferri iussit magnum Remedium, scilicet Corticem, quàm voluit illud suis manibus dispensare frequentibus aegrotantibus. Resq; tàm feliciter cessit, vt sicut ipsa liberales Dei manus experta in se fuerat, in eo admirando Remedio, ità quicumque alii sumpserunt indigentes, mirè quoque sanitatem fuerint adepti. Et hinc factum, vt is Cortex pulvis Comitissae vocatus deinceps sit, quod Hispani dicunt los poluos de la Condeça."

(j) Cobo, Bernade. *op. cit.* Prologue.

"Lo primero, por los muchos años que he residido en Indias, que no son ménos que cincuenta y siete, desde el año de 1596, que passé á ellas, hasta el presente de 1653. . . ."

