

Rusby (A. A.)

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Bonduc Seeds + + +





BONDUC SEEDS.

Casalpinia Bonducella (L.), Roxb., and *Casalpinia Bonduc* (L.),
Roxb.

BY H. H. RUSBY, M. D.

This drug, which is comparatively little known, and not at all esteemed in the United States, is official in the Indian Pharmacopœia, and has been used to a considerable extent in Europe. Like all other remedies specially adapted to the treatment of malarial fevers, its reputation has been entirely over-shadowed, and its use superseded, by the cinchona alkaloids. Like many others of its class, moreover, it possesses a considerable degree of merit, and its use is entirely admissible where, for any reason, the cinchona derivatives are not obtainable, or their use is contraindicated by idiosyncrasy or other condition.

Regarding the botanical origin of this drug, there has been, and still is, considerable contradiction to be found in pharmaceutical writings. Two very distinct and readily recognizable seeds are commonly to be found in every sample. The one is bluish gray, or drab, slightly flattened, and more or less angular; the other is yellowish-brown, and nearly spherical, and is commonly smaller than the first described variety. The first of these seeds proceeds from the *Casalpinia Bonducella*, the second from the *Casalpinia Bonduc*. Because both forms are always found associated, and because of the almost identical composition and properties of the two, it seems appropriate that both species should be named as the origin of the drug. These two plants have been known under quite a variety of botanical as well as common names, and the former have never until now, so far as I am aware, appeared correctly in print. Previous to the time of Linnæus, both plants were comprised under the genus *Bonduc*, but the name was set aside by Linnæus, and the genus *Guilandina* proposed for them, they receiving respectively the names *G. Bonducella* and *G. Bonduc*. The former species has, moreover, gone under the name *Lobus echinodes*, Clusius, and the latter under *Glycyrrhiza aculeata*, Forsk, and has even at one time been erroneously described in print as *Casalpinia Bonducella*, Flemming. Moreover, in their general appearance these two species were so very similar, each of them in some of its varieties very closely resembling the type



of the other, that opinion was much divided as to whether they really constituted distinct species, or were only varieties of one species. Adopting the latter view, De Candolle described them in the *Prodromus* as varieties of *G. Bonduc*, calling the typical *G. Bonduc* of Linnæus, "var. *majus*," and the *G. Bonducella* of Linnæus, "var. *minus*." In 1832, Dr. Roxburgh maintained that the species of *Guilandina* were not generically distinct from those of *Cæsalpinia*, a view which is now supported by Bentham & Hooker. He, therefore, rearranged them in the latter genus, retaining very properly the specific names assigned to them by Linnæus. To Linnæus, therefore, must be accredited the specific determination, by enclosing his name in the parenthesis, while to Roxburgh must be assigned the credit for the complete name as it now stands. The botanical names, therefore, must be written as above.

As regards the common names, a great number of them have been recorded in different countries where these plants grow, and there are probably many other native names which have never been recorded. According to the *Pharmacographia* the word *Bunduk* signifies a hazel-nut. In Brazil, where the *C. Bonducella*, grows, it receives the Indian name of "Inimboy," or "Inimboja," and by the Portuguese, "Silva do Praya," signifying a plant which grows upon a sandy beach. This habit of growing in the vicinity of the water, characterizes both species, which are found for the most part near the sea-coast or near the banks of rivers flowing into the ocean.

As regards the identification of the two species, it is most easily effected by means of the seeds, which are totally distinct from one another. The color alone, in the mature state, is sufficient for this purpose, and in addition thereto, we have a marked difference in form. The yellow seeds ordinarily occur but one in a pod, which is perhaps the reason that they are always approximately spherical. The gray seeds are occasionally also nearly or quite spherical, as may be seen in an illustration in *Flor. Bras.* XV, Part II, t. 21. More frequently, however, they are, as stated above, more or less compressed and angular. Inasmuch as these seeds ordinarily occur two or three in a pod, their form is probably the result of pressure thus applied. The identification of the plants when not in fruit, is by no means so easy. The only character which is, so far as I know, constant, is the possession by the *C. Bonducella* of a number of prominent stipules at the base of the leaf stalk, as shown in

our engraving, while these are altogether wanting in the *C. Bonduc* as observed in a specimen before me collected on the Prince of Wales Island. Ordinarily, moreover, the leaflets of the latter species are much thicker and more glossy, and at the same time more gradually pointed; but this character is not constant, for I have seen leaflets of both species which almost exactly resembled the typical form of the other. De Cándolle in distinguishing his two varieties, *majus* and *minus*, says of *majus* (*C. Bonduc*): "Leaflets ovate, spines sub-solitary, seeds yellowish;" of *minus* (*C. Bonducella*): "Leaflets oblong-ovate, spines sub-geminate, seeds gray." But nothing could be more variable than the forms of the leaflets, unless it were the arrangement of the spines; so that these distinctions are almost entirely useless. In the *Flora of Brazil*, an "observation" states that *C. Bonduc* is "distinguished by having no stipules, leaves larger, acute and shiny, and bracts erect before anthesis." But as regards the leaves, I have seen them quite as small as in the *C. Bonducella*, and in some specimens they are, instead of being acute, quite blunt or even emarginate and apiculate, just as in typical forms of *C. Bonducella*.

The genus *Cæsalpinia* is best known by the *C. Gilliesii*, Wall., or "Pride of India," an exceedingly handsome flowering shrub or small tree of India, largely introduced in many tropical countries, and commonly cultivated in all warm climates, including our own Southern States. *C. Bonducella* is described in the *Flora of Brazil* as a many-stemmed shrub, with branches loosely diffuse or climbing, pubescent or hairy in all parts, armed with numerous spines, those of the branches straight and acicular or conical, those of the petioles usually recurved and thickened. The flowers are rather small and of a dull color, the petals scarcely longer than the sepals. The pod is oblique, somewhat turgid, two to three inches long, almost one and one-half inches broad, densely muricate with straight prickles. It grows abundantly in all parts of tropical Brazil near the coast. There it is undoubtedly an introduced plant from India, where it grows abundantly. We also find it referred to as a plant of the sea-coast in nearly all tropical countries, both of the Old World and the New. *C. Bonduc*, on the other hand, is not nearly so widely dispersed, particularly in the New World. Although it has made its appearance in the West Indies, our figure being taken from a specimen collected in Cuba, it has not been

reported from the mainland either of Central or South America.

According to an article which appeared in the *Comptes Rendus* for July, 1886, p. 89, the medicinal portion of these seeds is the oily cotyledons which constitute 40 or 50 per cent. of the entire weight of the seeds, and the active principle is supposed to be a bitter extractive principle which occurs in nearly equal quantity in both species. Of this principle it is said that it constitutes a white powder, bitter without acidity. It is entirely soluble in alcohol, acetone, chloroform, and glacial acetic acid; very little soluble in ether or bisulphide of carbon. It dissolves in essential and fixed oils. The alcoholic, acetic, chloroformic, or acetic solutions, treated with water, common ether, bisulphide of carbon, or petroleum ether, become turbid or deposit more or less abundant flocculi. Showing the close similarity in chemical composition of the two forms of the drug, the following table is given:

	C. Bonducella.	C. Bonduc.
Oil	23.920	25.130
Resin (?), bitter active principle.....	1.888	1.925
Sugar	5.459	6.830
Saline matters.....	4.251	3.791
Soluble and insoluble albuminoids.....	21.612	20.490
Starchy matters.....	37.795	35.697
Water	5.000	5.800
Loss.....	0.075	0.327

Concerning the physiological action of these seeds, we are without any information except that they are used for their tonic and antiperiodic effects, usually in the powdered form, and most commonly combined with black pepper, chirata, and other stimulant and tonic substances.

MONTHLY REVIEW.

One of the most important occurrences of the year has been the meeting of the International Congress of Therapeutics, Materia Medica and Pharmacology at Paris, an excellent report of which is given in the Paris letter to the *Therapeutic Gazette*. Among the subjects discussed, a number are of special interest for our column. The subject of heart tonics and their classification seems to have been discussed at great length. To *Digitalis* first rank is assigned by common consent, and the weight of opinion favors the use of the powdered leaves in preference to any other preparation. After

this in importance, according to the opinion of the reporter, Dr. Bucquoy, come Caffeine, Convallaria, Adonis, Scoparius, Strophanthus, (both the *S. hispidus* and *S. Kombé*), and Scilla, with the Antiaris, Helleborus, Erythrophlæum and Oleander ranking third. Attention is called to the fact that all the drugs of this class are of vegetable origin. Convallaria was thought to be less powerful and certain in its action, but longer tolerated, than the others. Dr. Fereol had found that the administration of Convallaria could be kept up for years by administering and stopping it alternately for periods of 15 days each. The active principles Convallarine, Digitaline and Strophanthine, did not represent the properties of the drug in which they originated. Strophanthus came in for a very extended paper by Dr. Bucquoy.

In connection with the above discussion we would refer to the fact that Oleander and Strophanthus belong in the same natural order, and that various other species of the same family not yet introduced to medicine are well known in native practice as possessing similar properties, so that we entertain the hope that future investigations will develop other products of the Apocynaceæ which may be possessed of the important properties without any of the disadvantages, of the similar agents already in use.

M. Planchon introduced a discussion concerning the medicinal plants introduced within ten years. He referred to the strong current which had now set in the direction of the introduction of new vegetable drugs, and commented upon the difficulties attending their investigation, owing to defective material. He says, "for instance when Pichi was presented, a short time since, pharmacologists were at first much embarrassed, while, had they consulted Ruiz & Pavon's *Flora du Chili*, they would at once have found its scientific name and description." Prof. Planchon would not have been under the necessity of contributing this criticism had he read our original article in the *Therapeutic Gazette* in which we introduced this drug under its full botanical name and with every possible reference to its habitat, literature, composition and properties. Further on he refers to the fact that some alkaloids, "like Cotoine" were discovered before the drugs themselves had been identified. And here again we would remark that we are expecting shortly to receive specimens from which we can publish a figure, with name and description, of the Coto tree.

Prof. Planchon then introduced the question as to



Explanation of Cut.—(Size reduced one-half). Fig. 1, *Casalpimia Bonducella* (L.), Roxb.: a, branch bearing leaf and inflorescence, from a specimen collected in Cuba by Charles Wright (No. 2366); b, seed. Fig. 2, *Casalpimia Bonduc* (L.), Roxb.: a, fruit, from a specimen collected in Cuba by Charles Wright (No. 2359); b, seed; c, leaf.

whether it was better to use preparations representing the entire constituents of the plant, or to isolate the supposed active principle. The general feeling seemed to be that the latter class of preparations did not produce as a rule, the beneficial effects of the former. In conclusion the correspondent holds forth the pleasing hope "that a universal Pharmacopœia may at last be agreed upon at the coming Congress in 1890, when an International Medical Congress is to meet at the same time as the Pharmaceutical, and probably in connection with it in some respects."

In the *Medical News*, of August 24th, a very important paper is presented by Dr. David D. Stewart, late Chief of the Medical Clinic of the Jefferson Medical College, entitled "Cocillana in Diseases of the Lungs." The author says: "Scepticism regarding the virtues of so-called 'promising' new remedies, and disinclination to essay their trial when having at hand drugs the efficiency of which experience had left no doubt, caused me to use it at first only occasionally and a trifle perfunctorily, without attempting, in the hurry of practice, to keep records of results, until a number of favorable ones induced me to begin its systematic trial." As a result of such trials, he states that he has "no doubt that as regards the sphere of influence of the two drugs on the respiratory organs, the effects are not unlike, and the results obtained from Cocillana convince me that it possesses therapeutic properties which render it even superior to Ipecac in certain diseases of the air passages in which the latter is often used." Histories were taken of 40 cases in which Cocillana was prescribed, 10 of acute, one of sub-acute, 19 of chronic bronchitis, 5 of broncho-pneumonia, and one of phthisis. Of these, 21 were under observation for an average of 22 days. In many of the cases other drugs had been unsuccessfully tried when Cocillana was begun. Brief histories are given of 8 typical cases. In conclusion, Dr. Stewart says: "A conjoint analysis of the 21 cases shows that 16 of them were improved while taking Cocillana, and that 5 of the 16 were cured; that these 5 were cases of chronic bronchitis, and that the symptoms which were most distinctly influenced were cough, expectoration, night-sweats, anorexia, and constipation. In all of the 16 in which the cough was not removed it was lessened. Expectoration was diminished in amount in all of the 16 in which it was not entirely checked, and in 6 of the 16 in which expectoration was difficult before Cocillana was

begun it became much less so later under this drug. In at least 7 the cough became looser as it diminished in severity and frequency. The lessening in cough and in the amount of expectoration usually occurred within the first week. Two of the 21 stated that cough was aggravated rather than improved by Cocillana. Night-sweats present in 3 of the 16, disappeared in 2. Appetite was decidedly and early improved in 3 who complained of its loss when they first came under observation. In 3 of the 21 it was noted that the bowels were somewhat looser while Cocillana was being taken, though no laxative had been administered. * * * Two cases made complaint of nausea while taking the drug in moderately full doses at short intervals. In both, however, this effect was quite ephemeral, soon ceasing though the medicine was continued."

The readers of the DRUGGISTS' BULLETIN will doubtless remember that this important new remedy was introduced by the editor of this column, who discovered its properties by purely scientific methods of investigation, on a recent expedition to Bolivia. From a consideration of its physiological effects, its probable medicinal properties were foreshadowed. That prophecy seems to have been closely in the line of the facts as determined by Dr. Stewart from extended clinical trial. These results have been confirmed by a number of other experimentors. The laxative effect referred to by Dr. Stewart appears to be much more important than heretofore supposed. So great is this, that in the case of children it has been found to be an obstacle to its continued administration in some cases, a troublesome diarrhœa having resulted. For the same reason it has been found a most important laxative agent where such effect was desired, being in certain respects superior even to cascara sagrada. The idea suggests itself that a combination of fluid extract Cocillana with cascara sagrada would produce an exceedingly powerful laxative medicine. Its power of improving the appetite has also been particularly noted, and its administration for this purpose alone is fully justified. We trust that the readers of the BULLETIN will induce their medical friends to experiment with, and report upon, this most interesting drug.

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Mr. E. Lewis Sturtevant contributes a valuable paper to *Agricultural Science* for July, on "Edible Plants of the World," in which he tabulates the number of species recorded as edible, and the number of species as

recorded cultivated for food use, of each of the natural orders. Among edible plants he has counted all those which either habitually or during famine periods, are recorded to have been eaten. Among the cultivated edibles he has counted those species only whose cultivation is stated and not implied. Among the most important orders are the following:

	Recorded as edible.	Cultivated for food.
Anonaceæ.....	53	8.
Cruciferae.....	105	39.
Guttiferae.....	36	4.
Malvaceæ.....	51	12.
Tiliaceæ.....	43	4.
Geraniaceæ.....	37	11.
Rutaceæ.....	52	28.
Rhamnææ.....	44	4.
Anacardiaceæ.....	63	10.
Leguminosæ.....	320	119.
Rosaceæ.....	239	78.
Myrtaceæ.....	162	17.
Melastomaceæ.....	37	...
Passifloraceæ.....	36	6.
Umbelliferae.....	156	35.
Compositæ.....	157	49.
Vacciniaceæ.....	37	3.
Sapotaceæ.....	45	10.
Asclepiadaceæ.....	30	...
Solanaceæ.....	159	60.
Labiatae.....	76	46.
Amarantiaceæ.....	32	18.
Chenopodiaceæ.....	46	27.
Polygonaceæ.....	57	24.
Urticaceæ.....	116	21.
Cupuliferae.....	53	10.
Zingiberaceæ.....	50	21.
Dioscoreaceæ.....	39	24.
Liliaceæ.....	125	26.
Palmææ.....	102	12.
Aroideæ.....	39	17.
Gramineæ.....	114	66.
Coniferae.....	46	4.

The total number recorded in the first class is 4233, of the second 1070. Remarking upon the list Mr. Sturtevant says, "In any event, it is calculated to afford a basis for curious statistical deduction." Indeed it is! Texts for a great number of interesting papers might here be found.

The *Annual Report of the Public Gardens and Plantations of Jamaica* for the year ending September 30th, 1888, is at hand. From it we learn that a most excellent service has been rendered by these Gardens during the

year in the diffusion of information through its *Bulletins* and correspondence, and by the distribution of plants and seeds. 10272 plants and cuttings have been distributed in Jamaica alone. Regarding Cinchona, it is stated that the plantations have up to date, yielded returns from the sale of bark to the amount of nearly £17,000. No bark has been exported during the past year, presumably on account of the very low price. Much as we are interested in reading such accounts as this, it is discouraging to think that while such little islands as Jamaica and Trinidad possess admirable institutions of this kind, our own great country, with its vast resources, is without any botanical garden worthy of the name.

The second part of the Digest of Criticisms on the United States Pharmacopœia has just appeared. The list of articles recommended to be dropped, and the provisional list recommended to be introduced, are well worth the careful study of pharmacists and physicians.





