The properties and preparation of the Rio Negro sarsaparilla, and of the angustura bark, practically examined / [John Hancock].

THE

Properties and Preparation

OF THE

RIO NEGRO SARSAPARILLA,

AND OF THE

ANGUSTURA BARK,

PRACTICALLY EXAMINED:

BY

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PREFACE.

THE two papers which form the present pamphlet, having been read before the Medico-Botanical Society, were printed in Vol. I. Part I. of their Transactions.

Considering the subjects of these two papers, however badly treated, as involving certain questions of much importance to medical science, and as tending, perhaps, to induce more able and effective investigation, on points which appear to have been too much neglected; the author requested of Mr. Wilson, the printer of the journal, previously to breaking up the types, to throw off a few extra copies of these papers, for the accommodation of those who might not hereafter have the opportunity of procuring the entire journal.

It is conceived, that certain pharmaceutic methods or manipulations herein alluded to, may be capable of more extensive application, for obtaining the active properties of various medicinal vegetables; and to this the attention of the reader is solicited.

The writer would likewise solicit the attention of liberal and enlightened men, to the subject of phthisis pulmonalis, in connexion with the healing of scrofulous, cancerous, and other ulcers, by constitutional treatment, and towards extending the curative means from external to internal ulcerations; for it is conceived that, by due attention from the faculty, important improvement may be thus effected in the treatment of some of the most untoward and destructive maladies.

PROPERTIES AND PREPARATION

OF THE

RIO NEGRO SARSAPARILLA.

THE admirable effects, and consequent high price, of the article in question, has induced the inhabitants of those countries from whence it is imported, to gather it from all the different species of SMILAX, the roots of which have any resemblance to the genuine sort, and even from some other plants of different families. Till a very recent period, the people of Essequebo mistook for Sarsa, even the pendent fibres *(not roots)* of a species of climbing ARUM, with large heart-shaped leaves; and, however gross the error, I found certain medical practitioners there, indulging in the belief of its being the genuine drug, and employing it as such! We cannot be surprised, therefore, to find the European market abounding with false kinds of Sarsa, which sufficiently accounts for the little credit given it by many of the faculty, both at home and abroad.

Of the six or eight species of SMILAX which I have observed growing in the woods of Guiana, I never found but one to manifest to the taste any thing of the sensible qualities of the genuine medicinal Sarsa; the rest being, for the most part, perfectly insipid in the mouth and fauces, and, as far as my experience goes, nearly inert as remedies. In reference, indeed, to *medicinal powers*, there are evidently two distinct divisions of this genus of plants, although we know of no botanical characteristics for thus distinguishing them into two sections. Botanical analogy seems entirely to fail us in this instance. It appears fully evident, however, that, of this numerous genus, but a very small proportion indeed, are to be considered as possessing any very marked medicinal properties.

The species just alluded to, as possessing some active properties, grows on the declivities of the hills and mountains up the Essequebo, and doubtless in various other parts of the interior. The stem is round, armed with short curved spines; the leaves are oblong, pointed, distant, smooth, and glossy; the root is a tuber, with numerous divergent fibres, of two or three lines in thickness, and several feet in length.

Unfortunately, the traveller's attention is absorbed by a vast variety of interesting scenes, while traversing the Guiana forest, and he is prone to neglect special objects. I have no doubt, however, that the Rio Negro Sarsa will one day be found growing abundantly within the limits of British Guiana; and whoever makes this discovery, will confer an inestimable benefit on the public. Not only this, but the discovery of the true Ipecacuana plant, and the Cinchona tree, are amongst the important discoveries which may be anticipated in Guiana, either upon the plains, or on the range of its interior mountains. Such discoveries are to be expected from the *real* botanist, who combines a knowledge of the external forms of plants, with the more important science of their intrinsic properties, their application to medicine, to the arts, and domestic economy.* I must here observe that, from my examination of samples of the genuine drug from the Rio Negro, (to which these *observations* chiefly refer,) as it arrived at Angostura, with parts of the stem adhering, it appeared that the species described by Willdenow, as the SMILAX *syphilitica, caule aculeato tereti aculeis axillaribus,* is not that which is regarded as the true and more active species, which has no axillary spines, and may therefore still be considered as a *nondescript* species. The natives, (the Mandavacas of Cassiquiari,) of whom I made inquiry, denied that the true kind was to be found on the banks either of the Cassiquiari or the Guainea, as they call the Rio Negro. I placed

* The present would be a most favourable time for a botanist so inclined, to set about an enterprise of this nature, as he would find, in the enlightened Governor, Sir Benjamin D'Urban, the support of a zealous and unaffected patron of science.

the more reliance on this information, as these were *Peones* who had been employed in collecting the Sarsa, which, as they asserted, was chiefly obtained on the elevated lands of the Rio Imiquen, at Unturana, and Caraburi. They acknowledged too, that, when the right sort was not found in plenty, they sometimes dug one or two others, which they esteemed to be nearly equal in quality.

The Sarsa of the Rio Negro, which comes by way of Angostura, and, at times, through Para, is the best. Respecting this species, indeed, I can speak with confidence, having had ample experience of its medicinal properties, especially in Angostura, where I lived nearly four years. It is the only remedy used for the cure of venereal affections, and many others falsely considered as such, in the Orinoco; not to mention its great power in rheumatism of long standing, and in a multiplicity of chronic complaints.

The Sarsaparilla which is usually met with in the shops, however, is, for the most part, nearly inert, either from age, or being procured from various non-medicinal species. It should be taken from recent importations in the *roll*, and not that which is kept slit up, in the shops, which is very often quite useless. Good Sarsaparilla has a peculiar nauseous acrimony when chewed; and this is almost the only criterion we have for judging of its medicinal activity.

It is quite amusing to observe the divers opinions respecting the nature and properties of this medicinal root. In Mr. Rennie's Supplement, page 384, it is stated, that "genuine Sarsaparilla is covered by a brown or reddish bark, with a central woody portion, soft, white, and sometimes like starch. This part is useless, the virtues residing in the bitter principle of the bark; and the more it inclines to a red colour, it is the richer and more powerful. The gray and dirty-brown sorts are not good. The best sort comes from Jamaica and the Brazils, called Lisbon Sarsa; the worst from Honduras and Vera Cruz. (Pope.)" Here, it would appear, that it is only the thin pellicle of bark, a sort of epidermis, which is allowed to possess any useful pro-

perty; and the *colour* of this pellicle is the only character called in for discriminating the different kinds, or for judging of their medicinal powers!

The Sarsa of Rio Negro has various shades, according to the modes used in drying it, but it is usually very dark coloured. The fact is, the real and only criterion for knowing good Sarsa, is almost universally neglected, viz. its sensible qualities in the mouth; and which affords the best and most effectual guide for enabling us to judge of the intensity and value of vegetable remedies in general. It is by the taste and odour, chiefly, that we are enabled to judge of good Peruvian Bark, Rhubarb, Jalap, &c.; and even the speculators about Cinchonine would be guided more by such tests, in choosing good bark, than by their hypothetical ones of glue and tan.

The medicinal properties of Sarsaparilla, moreover, are not confined to the bark so called, but are found to reside almost equally in all parts of the root, as the cuticle, woody, and farinaceous portions. This has been fully proved in Demerara, by the results of their separate administration in actual disease. The same will easily be believed by a trial of their sensible effects on the mouth and fauces.

The medicinal powers of Sarsaparilla, I am inclined to believe, depend on a certain *acrid* or *nauseous* matter, or on a principle similar to that of Ipecacuana, judging from its sensible qualities and clinical effects; and this acrimonious or nauseous matter, which I find to exist in the more active medicinal Sarsa, is, in some measure, covered or concealed by its demulcent or mucilaginous particles, which may also contribute something to its curative powers, added to the diluting effects of the water employed. As sudorifics, their action seems to be similar. So also, in emetic properties, when the Sarsa is taken in large doses, and not spoiled by long boiling. However this may be, I suspect that Ipecacuana might, in many cases, be employed with equal advantage where Sarsa is indicated. This, however, I know from sufficient experience, that the powers of Sarsaparilla are, like those of Ipecacuana, quite destroyed by long boiling.

It is true, indeed, that the condensed vapour arising from either, is perfectly insipid; but it is, with regard to Ipecacuana, well known that, "though the water distilled from it has scarcely any emetic effect,"* it becomes nearly inert by long coction; and precisely the same is true with regard to the Sarsa.

After long boiling, indeed, the peculiar *odour* which rises abundantly on the coction of *good Sarsa*, is almost extinguished. From the Sarsa prepared in this way, I found no sensible results upon any patient, nor were its peculiar nauseating, drowsy, and racking effects, produced by a large quantity, although the concentrated decoction of six or eight ounces were tried at a dose.

These experiments having been carried to a sufficient length, most of the same patients recovered under the use of the Sarsa, taken from the same parcels as before, but now prepared by simple maceration in hot water, *i. e.* affused in a boiling state, and kept near the boiling point for some hours. In all cases, the Sarsa was directed to be well bruised in large mortars, and in the mean time, all other remedies were abstained from, which might, in any way, affect the result.

Knowing, then, the destructive effects of long boiling on this drug, we cannot wonder at the doubtful and discordant reports given of it by our medical and pharmaceutical writers, after they have directed it to be *boiled down to one half*, &c., which must indeed render it very nearly useless and inert.

Another preparation, still more preposterous, appears to be exceedingly in vogue at the present time; that is, to boil down the decoction of Sarsa into an extract. By this absurd practice, its virtues are still more completely destroyed. It is much to be lamented, that such vast quantities of this valuable root are thus thrown away in vapour, a *boiled*, if not a burnt offering, to the goddess of Folly. On entering some of the shops in London, where this process is carried on upon a large scale, we find the rooms teeming with the effluvium, which may be regarded as the active principle, or, at least, as an element necessarily connected with it; since we find that, in proportion as we

* *Murray's Mat. Med. p.* 322.

drive off this odorous principle by heat, we despoil this remedy of its active properties.

Mr. Brande remarks, at page 404 of his very useful Manual of Pharmacy, that, " there is much difference of opinion respecting the activity of this extract, (as directed by the College), among those who admit the efficacy of other forms of Sarsaparilla. It is certainly the worst preparation of that remedy, as it is usually met with, for it is *easily decomposed by heat*, and always suffers more or less during the protracted evaporation that is required." These remarks are exceedingly just, and similar ones have been made by Murray and Thompson, yet they seem to be entirely disregarded by the practical pharmaceutists, perhaps because they consider them not to be derived from actual experiment.

As prepared by the College directions, the extract must certainly be quite inert; and it would seem, that some presentiment was entertained of its inefficacy, for, by way of compensation, as it were, it is directed to be given in the *decoction* of the root! But certain sages of our profession have assigned to this useless extract, and to that not less useless syrup of Sarsaparilla, which is prepared from the extract, their best offices, when, in prescribing the decoction, they say " *thicken* it with extract, and *sweeten* it with syrup!" We have seen those boasted extracts and syrups used in great quantity, and at great cost, but in vain; when afterwards a quart of the strong infusion has removed all the violence of the symptoms.

In speaking of the deterioration of Sarsaparilla by long boiling, I have only insisted on that which depends on the loss of its active principles by evaporation; but that which arises from the action of the air and heat, during a tedious process of boiling, must, in a great measure, subvert its affinities, form insoluble compounds, and precipitate such of the active materials as may not be dissipated in vapour. It is doubtless the latter, however, or the evolution and loss of its volatile parts, which proves the most injurious.

The boiling *in vacuo*, as it is rather improperly termed (for

we can scarcely consider it a vacuum, where the space is continually occupied by the production of aqueous vapour), is said to be a vast improvement in the preparation of decoctions, extracts, &c. It doubtless will be an advantage where much boiling is *really necessary*, principally by avoiding the access of air, smoke, and sooty matter, by which the extracts will at least appear more clear and pleasing to the eye; but it will by no means obviate the main objection just stated to the process of boiling, while it is far too operose and expensive for general use; and if, as asserted, the atmospheric pressure be taken off, it will not only facilitate the evaporation of the water, but that of the volatile elements of the drug likewise. There is, however, no occasion whatever for boiling: if the drug be duly bruised or reduced to a gross powder, the affusion of boiling water and digestion therein, just below the boiling point, will extract the active properties of this or other vegetable remedies, as completely as could be done by the longest coction, and without the loss or dissipation of their volatile parts;* and when required, it may be effected with a very small quantity of fluid, if a powerful press be employed after due maceration in hot water. The medicinal properties of dried vegetables, may thus be extracted as perfectly as could be done by expressing their juices in a fresh or green state. Those containing resinous principles, require, of course, a similar operation with alcoholic menstrua or proof spirit. This method would be the most expedient for procuring unaltered the native properties of all those remedies depending on volatile or fugaceous principles, as in the narcotic drugs, or those containing essential oils, for example, hemlock, henbane, savine, &c.

Over such preparation as I have just deprecated, that em-

* It is the *ebullition* or *intestine motion*, caused by the heat, which elevates and drives off the aqueous vapour and the volatile parts of the infusion along with it. When at the temperature of 212, the water is progressively converted into steam at the bottom of the vessel, its elasticity or expansive power then overcoming the weight of the superincumbent atmosphere. By raising the heat, therefore, to the boiling point, we rapidly increase the evaporation, whilst the solvent power of the water remains nearly the same as when a few degrees lower.

ployed by the Spaniards of the Orinoco, is indisputably superior. There, it is prepared constantly without boiling, either by digestion in wine, or a spirituous menstruum, or by an infusion with water, allowing it to stand for eight or nine days exposed to the sun's rays, or by a fire side in the rainy season, and forming thus a strong vinous or fermented liquor. After my return from the Orinoco to Demerara, in January, 1818,* I had

* Early in this year, I published, in the Guiana Chronicle, the Spanish recipe for the Jarave, so called, or diet drink, after which the use of the Sarsa became very general in the Colonies. The following is a somewhat modified and improved form of this recipe:—Take of Rio Negro Sarsa, bruised, 2lb.; Bark of Guaiacum, powdered, 8oz.; raspings of guaiac wood, anise seeds and liquorice root, each 4oz.; mezereon, *bark* of the *root*, 2oz.; treacle, 2lb.; and a dozen bruised cloves: pour upon these ingredients about four gallons of boiling water, and shake the vessel thrice a day. When a fermentation has well begun, it is fit for use, and may be taken in the dose of a small tumblerfull twice or thrice a day.

The publication of the recipe, at least gave an impulse to the employment of Sarsa in the Colony. For some time, it was prepared according to the Spanish process, and which certainly produced the most beneficial results,—surprisingly so it might be said, for many spoke of it as effecting very extraordinary and unexpected cures, even in old invalids, or those who had been for a long time entirely crippled.

Some years afterwards, many were found to complain, that they had not experienced that efficacy in the *decoction* which had been reported. It was soon perceived, on inquiry, that the persons who had been thus disappointed, were for the most part, those who had confounded the preparation with that of the old *decoction* of woods, prepared by long boiling.

The recipe, or formula, having been anonymously published in the Gazettes, which are seldom preserved in Demerara, in a short time after, no indication was left for recurring to it. Many people would send to the druggists' shops for the articles, and some not even knowing what was meant, would send for the *decoction of the woods*. They received the packages, of course, with a very small portion of the more active article, Sarsa, (it being the dearest one), put up in the old way, and with the usual pharmacopœial directions, by which it was boiled till quite exhausted of all active properties. This affords an example of the dilapsus and neglect of many of the most valuable remedies from mere carelessness and inattention.

If intended for old and obstinate complaints, as leprous affections, elephantiasis, various anomalous ulcerations, and foul disorders of the skin, there was added to the jug a solution of tartrate of antimony, with muriate of mercury and ammonia, viz. Antim. Tar. 12grs. Hydr. Oxymur. 8 or 10 grs. Mur. Ammoniæ, 2 drachms. These three articles, being previously dissolved in a little water, are to

opportunites of trying its action on numerous patients in every way I thought proper; and I found, by a long series of experiments, that the fermented infusion was equally as efficacious here as in the Orinoco. It appears to me very probable, that the acetous and alcoholic principles gradually evolved in the course of the fermentation, serve more effectually to extract the active properties of Sarsaparilla than can be done by any other method we are acquainted with. There seems to be a certain fixed principle in the Sarsa from Para and the Rio Negro (and probably in other kinds also), which is not so completely taken up or dissolved by boiling water, for after exhausting half a pound of this sort by two digestions, boiling, and pressure, I added to the dregs half a pint of proof spirit, and digested this with a gentle heat for a few hours in a close vessel, then affusing hot water to the amount of that taken off from the first boiling, and pressing again, I procured, by this last operation, about four pints of an infusion, which possessed the acrid properties of the Sarsa,

be thrown into the jug, when the infusion has well begun to ferment, not before, as they would prevent the fermentation taking place. The addition of those active ingredients not only greatly enhances the alterative power of the vegetable infusion, but, at the same time, so effectually prevents its decomposition that it may be kept for a long time quite unaltered, even in a hot climate,—a circumstance of great moment where it is frequently required for a number of patients.

I once mentioned such a formula in conversation with a chemical critic, who, in the fulness of his wisdom, scouted the idea of such a compound, and pronounced most dogmatically, that between the tartarised antimony and muriate of mercury, the *whole* would be *decomposed!* I merely requested he would try it and convince himself, but heard no more from him. The truth is, no change whatever occurs from this admixture. Were the articles of the solution separately employed, there would be a trifling decomposition in the vegetable infusion; but these three articles being first united, form the most effectual conservative compound which it is possible to devise, either for vegetable or animal substances; and they so bind the different elements as to render them, for a long time, quite inseparable from exposure to light and air.

For some fastidious and delicate people, a variation was, at times, requisite, in which case the infusion was taken by itself; and, in lieu of the above solution, very minute doses of calomel, or the gray oxide of mercury, with precipitated sulphur of antimony, in pills, were substituted, as a quarter of a grain of the former with half a grain of the latter, night and morning.

in a much higher degree even than that obtained by the first decoction with simple water.

The activity of Sarsa as a medicine, seems to depend, as already observed, on a kind of narcotic quality, affecting the tongue and fauces with more or less of a nauseous acrimony,—the degree or intensity of which, affords the best indication of the strength and value of the drug. Its effects on one patient, an African, were certainly those of a narcotic, agreeably to the best definition of this term. It was given him in a large dose, the infusion from 4oz. of Rio Negro Sarsa. It caused nausea and great prostration of strength, a degree of torpor which induced him to lie upon the ground with unwillingness to move or to get up. He said that it made him "sick as death, and broke all his bones." There was scarcely any alteration in the pulse, unless it were a little retarded.

Whatever restorative and aphrodisiac virtues may have been by the ancients attributed to the OPHRYS *Satyrion*, or the different Orchideæ, it appears to me, that the Sarsa is the only medicinal agent justly entitled to the character of a direct restorative. This property, at the same time, seems to be totally unconnected with, or independent of, its farina or amylaceous principle, since it is found to produce the same restorative effects, not only when prepared by an aqueous menstruum, but also in a saturated alcoholic tincture, which we know could not take up those amylaceous or simply nutritive particles.

This is one of the most remarkable effects of the genuine Sarsa, and tends clearly to exemplify its eminently salutary properties, namely, the augmentation of flesh, and melioration of the habit, so frequently observable in patients who have taken it for some time. It was noticed by many of the planters of Demerara, as well as by eminent medical practitioners, that not only did sores heal up, and swellings of the joints subside, on the use of the Sarsa,* but that the patients acquired a

* It was proved by numerous examples, that the Sarsa was the only efficient article in the preparation, and equally successful by itself, whilst the other woods, &c. usually joined with it, were productive of little or no perceptible effects on

plumpness, smoothness of the skin, and a degree of activity unknown before.

Whatever be its mode of action, its advantages will doubtless be found very great in the treatment of phthisis, scrofula, and in gout,—and especially in correcting the constitutional diathesis tending to those disorders.

It is esteemed by the Colonial Spaniards, as a remedy for every stage of syphilis. When they go under a course of this remedy, they drink barley water, vegetable acids, and cooling articles, to counteract the stimulant effects of the Sarsa, for they consider it very heating *(muy caliente)*. Perhaps they should ascribe this effect more to the vinous menstruum which they employ.

Much has been said by different writers regarding the *specific* powers, so termed, of Sarsaparilla, as a remedy in lues venerea. Although well convinced of the great efficacy of the genuine Sarsa, under proper regimen, in the various stages of lues, I consider it no specific; and it is not particularly as an antivenereal remedy that I would insist on its value, but as a general corrective and sanative agent in scrofulous swellings, ulceration, and lesions of various kinds, and especially in general marasmus, cachexia, debilitated and emaciated habits, and in disorders arising from the abuse of mercury.

Those narrow views and vain discussions about the specific action of Sarsa in syphilis, have had the effect of keeping down its character, as a great and extensively useful remedy—a character which it certainly deserves. It is to the want of a proper regimen under its use, to the introduction of spurious kinds, and to faulty modes of preparing it (by long boiling especially), that we are to attribute the frequent failures which many complain of, and for which it is even totally neglected by some practitioners.

the patient or the disease. The Bark of Guaiacum, however, was an exception; but not being an article pertaining to commerce or found in the shops, it was seldom obtainable. Certain native plants were also found exceedingly useful in healing ulcers, and as general alteratives; but these are scarcely relevant here and are intended to form the subject of a separate paper.

The disease, however, which in the Orinoco and Venezuela, most frequently demands the employment of this invaluable alterative, is a species of rheumatism, which commonly follows gonorrhœa, making its attack soon after the discharge has been suddenly stopped, and the patient has been exposed to cold and moisture.

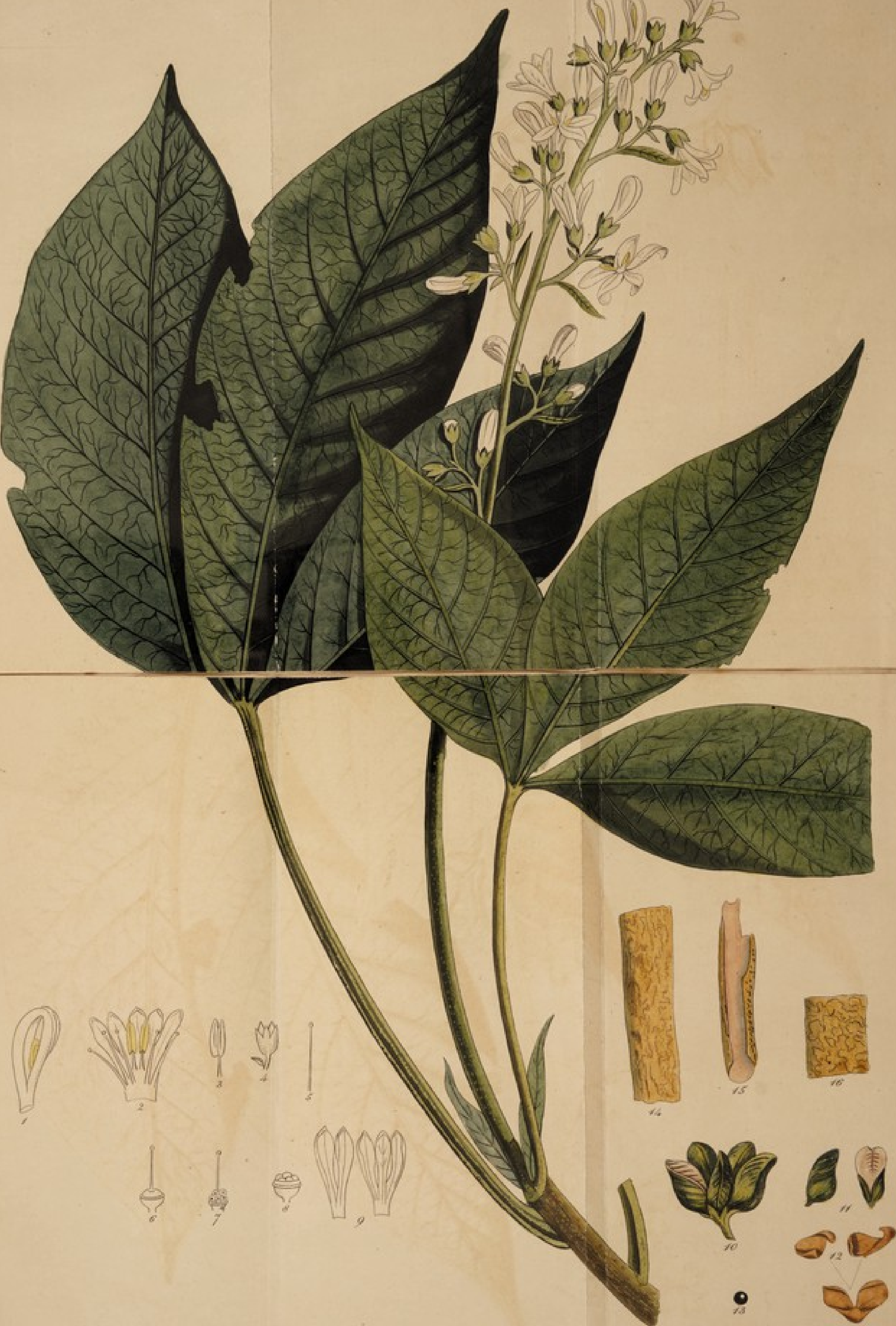
This species of rheumatism, from suppressed gonorrhœa, is so common an occurrence in Venezuela, that it usually takes the name of *galico, (i. e.* venereal); and as most rheumatic affections are there referred to this cause, we rarely hear it spoken of under any other title.

The true gonorrhœal rheumatism, however, makes its attack upon the muscles, the ligaments, and even the periosteum of the bones, soon after the discharge disappears. The joints are rendered immoveable; all the limbs, the spine, hips, and shoulders, suffer excruciating pain; after a time, these symptoms are followed by *tophi* upon the tibia, os frontis and bones of the fore arm, and the patient, if not timely relieved, becomes quite crippled and emaciated.

Whatever obloquy may arise from an avowal of our own misfortunes, the paramount objects of truth and candour compel me to say, that such as just described was *my own* case during several months of the year 1814; and that, after a full, but ineffectual trial of mercury, and the usual European remedies, I was entirely restored to health, by taking a single *botejuela* or small jug of the *Jarave del Rey.*

Having been long a convert to some of the exploded or unfashionable doctrines of the humoral pathology, it may readily be believed, that my faith was not diminished by considering the striking translations of disease, from one part to another, so apparent in the foregoing, and in numerous other cases equally convincing.

They also satisfy me, that, in certain cases at least, and these more frequently than is commonly imagined, secondary symptoms follow gonorrhœa as well as syphilis; and, when added to the observations of the army surgeons, (as to gonorrhœa producing



John Hancock M.D. direx.
G. Spratt Del.

Galipea officinalis (Hanc.)

Trans. of the Med. Bot. Soc. Vol. 1. p. 27.

Engraved by R. Havell, Jun.

chancre, and chancre gonorrhœa), they tend to establish the identity of these diseases.

The Spaniards, I may observe, by the term *reumatismo,* seem to mean nothing more than a flow or prevalence of acrimonious humours in the body,—the same as appears to have been understood by the Greeks in their ρευματιζω or rhĕumatizō,—afflicted with humours—" rheumatismes Græci fluxiones vocant." *Plin.*

There is a scrofuloid species of ulcer which more frequently infests the negroes; appearing in different parts of the body, but more especially about the lower extremities, arising with a whitish head, remaining stationary for a long time, and when opened, mostly found to contain a curdy matter. In its rise, progress, and structure, it has a close analogy with tubercles of the lungs. It is of a most intractable nature; and usually requires, as a preliminary, the application of a strong escharotic. There are varieties of this ulcer; some of which, on being opened, shew plainly the hydatid form, or half-organized structure; in different stages, *steatomatous, curdy, purulent,* &c.: they are encysted, and are doubtless animalcules. In their more perfect state, plano-convex, or shape of a coffee seed, marked with a sort of umbilicus, or black dot, on the flat side. Some of the old women in Demerara shew a surprising degree of patience in picking out these troublesome subjects, to which they give the name of tetter ring-worms.

Mercurial salivations may cause these ulcerous tumours or tubercles to heal, but they soon break out again, without the timely use of Sarsa, which is almost the only remedy we know of that will heal them with any degree of permanence; and of this we usually find a long course is required. The nitric and muriatic acids were likewise found greatly to contribute to the sanative process; and not only in this species, but in most other inveterate ulcerations so common in the Colonies.

It was in the course of my practice in those anomalous and inveterate complaints, that I perceived the absolute necessity of attending to the doses of medicines in a degree too rarely noticed and too little insisted on by medical writers. I especially

allude to the necessity of watching the results and augmenting the doses of the remedies till some sensible effects are produced on the system. When that is sufficiently apparent, the remedy, whether it cause inconvenience to the patient or not, is to be discontinued for a time,—a week or two, and sometimes longer, according to the intensity of its action on the patient. When its apparent effects have subsided, we may again commence its use in a small dose, and augment it gradually as before.

By reflecting on the control thus acquired over external ulceration, it naturally occurred to me, that the same method ought to have its influence in some cases of pulmonary lesions with severe cough and purulent expectoration, as also in ulceration of the bladder and other viscera.

It is true I had but few opportunities of repeating experiments proper for illustrating this important point, having left the Colony not long after I had formed the plan here alluded to. My experience in this, however, was such as to afford me the most confident hope of its ultimate success in phthisis and internal ulceration.

In other cases likewise of obstinate chronic and cutaneous disorders, it is not unfrequently found requisite, especially amongst the negroes, to employ various additional remedies. A preliminary light course of mercury and antimony, nitric acid, iodine, muriate of barytes, mur. tinct. of iron, sulphureous fumigation, a grain of opium at night, and the vapour bath occasionally, are amongst the best auxiliaries. The disorders here alluded to, are, for the most part, of that anomalous description, which it would be impossible to characterize by any definite name as being chiefly complications of yaws, elephantiasis, leprosy, syphilis, and scrofula, developed in various lesions or affections of the skin, joints, ligaments, and glandular parts, as cutaneous eruptions, swellings, ulcers, &c., in different parts of the body.*

* Amongst the chief exciting causes of such affections, we should mention exposures to vicissitudes of weather, in the rainy season especially, sleeping in the open air, and defective nourishment. The latter cause, however, is not so frequent amongst the slaves, as they are usually well fed by their masters, whose interest,

I ought to observe here, that from the few trials I have made with iodine, it appeared to be a very useful auxiliary in leprosy, and in those scrofuloid ulcers here spoken of, as also in swellings

humanity apart, is too deeply involved to allow this point to be neglected; and, in case of deficiency, it would be speedily corrected by the inteference of the law—which, in one of the richest soils conceivable, renders it compulsory on the planter to keep in proper cultivation, for every five slaves an acre of land, and which, admitting the statement of Baron Humboldt to be correct, would be a supply for many times that number of people. See his *History of New Spain, vol.* II. *p.* 374, where it is said, that " the produce of the banana is to that of wheat as 133 to 1, and to that of potatoes as 44 to 1."

Without recurring to any exaggerated reports, and although never an advocate for slavery, I may here take occasion to remark, that the present condition of the slaves in the British *Continental* Colonies (I do not allude to the Islands), may, in point of comfort and plentiful supply of food, be said to be quite enviable, compared with that of the labouring classes in this country. This is a truth which ought in fairness to be stated, but it is not intended as an apology for slavery.

And this advertence, which may seem irrelevant here, I have introduced, because, upon speaking on these subjects in London, it has been more than once suggested to me, as a query, whether the negroes were not *half starved* in the Colonies. A person of very moderate capacity like myself, after a residence of twenty-five years in the Colonies, ought to be able to form a tolerably correct opinion on the subject.

Of salt provisions, the Newfoundland cod-fish constitutes the principal, and of which, they have an allowance of 2lbs. each per week, besides every facility for fishing and raising fowls, and various domestic animals.

Of vegetable aliment, the *plantain* is considered the staple and indispensable article of food in Guiana; but, independent of this, the slaves are allowed as much land as they choose to cultivate; consequently, those who are inclined to a little industry can procure, for their own use and for market, an abundance of yams, maize, sweet potatoes, and other nutritive vegetables. They are frequently found, however, to be very indifferent to this privilege, and, therefore, the supply of those articles, in order to ensure its permanence for their families, is, on certain estates, under the express direction of the proprietor or manager. It is the plan laid down by the proprietors (Messrs. Rose and Croal) on one of the largest, most productive, and healthy estates in the Colony, viz. Plantation *Lima*, on the west coast of Essequebo. I mention this beneficial practice, not as one universally followed, but as deserving imitation by all; for it is well known, that admixtures of similar alimentary substances, not only prove more grateful to the palate, but also develope in the stomach and *prima via*, a more perfect chyle and pabulum to the blood, and contribute, of course, much more strength and vigour than can be derived from any one taken singly, as, in respect to medicines and spices, their powers are greatly enhanced by combination.

of the knee joint, common in Guiana, being a species of hydarthrus, or white swelling, arising as the results of cold and rheumatism, in strumous habits especially.* In lepra, the use of iodine was suggested, by the presence of those glandular lumps or tubercles, which, in all advanced cases, might be felt under the skin, especially in the legs and thighs of lepers, and withal greatly disfiguring the face. This remedy was exhibited in small doses, cautiously augmented, in the form of tincture, in the manner advised by *Coindet,* in somewhat analogous disorders of the glandular system; and also, as a deobstruent tonic, in cachexia or anasarcous habits, depending on glandular visceral obstructions.

The advantages gained by these remedies were often very great; they seemed to impart to the system a susceptibility to the action of Sarsaparilla, and the bark of guaiacum. In one case of chronic hepatitis, the symptoms were quite removed by the use of iodine and Sarsa, or *on* their use; for it is not always easy, when a recovery takes place, to decide how much is re-

* When the joint was found much enlarged, the contained fluid was let out with a common lancet. This fluid was usually of a slimy or gelatinous nature, not unfrequently similar in appearance to that of the bursæ mucosæ in a healthy state, and more rarely sanious or purulent. I never observed any ill effects from these openings, or from the ingress of air which has been so much dreaded: indeed, the neglect of it must inevitably cause a stiff joint, or render amputation necessary. I may possibly labour under some erroneous impression, but I have long regarded that as one of the most preposterous of pathological dogmas which proscribes the timely opening of these tumours. It has probably arisen from several different tumours of the knee joint being confounded under the same name or names. Instead of discharging their contents by one of the simplest and safest operations, it is usually enjoined, that they be allowed to break of themselves: the consequence is, that the matter or fluid being pent up for a long time makes its way in different directions under the muscular expansions, forming sinuses, corroding the capsular ligament and the ends of the bones, and, at the least, leaving the patient with an incurable anchylosis It is, in general, only necessary to let out the fluid and bind the knee moderately tight with an elastic bandage. In cases where adhesion has not followed, and the collection and swelling have returned, I have injected into the sac a very dilute mixture of honey and water, and again pressed it out as soon as a little pain was excited, and this, with the internal remedies just mentioned, have effected the cure.

spectively due to nature, and how much to the remedy administered. Another instance may be adduced, in which an inveterate cough attended, and which gave reason to suspect the existence of tubercles in the lungs: the patient recovered after a six weeks' course of iodine and Sarsa. In some other cases of this kind also, the results seemed to afford a hope, that the action of iodine, may equally contribute towards resolving the pulmonary tubercle, as well as those seated more superficially.

The *compound infusion* of Sarsaparilla (p. 12), is that on which, in most cases, we may place the greatest reliance. Its first effects are rather laxative; opening the emunctories, increasing sweat and diuresis: the ultimate results which are observed to follow the use of it, are, to improve the assimilatory process, increasing the appetite, and the powers of the stomach and digestive organs. Whether or not it be by virtue of this intermediate action upon the alimentary canal, its remote effects on the system are sufficiently apparent, not only in the disorders already named, but certain others, and especially so in *gout*, the paroxysms of which are not merely shortened, but the peculiar *relaxation, inertia,* and in short, the *gouty diathesis* will often be, in a great measure, removed by its use, and especially if employed in conjunction with the *Ol. Ocotea cymbarum*, or native Oil of Laurel, by internal use and by friction. During the use of *all* those remedies, it is requisite that a bland and moderate regimen be made use of, avoiding for the most part, high-seasoned food, and spiritous or vinous liquors.

The genuine Sarsa, as in the same recipe above cited, proves also a very potent antihydropic, especially in cases of great debility, and where dropsy arises in emaciated habits. The diuretic power of the Carony Bark will be seen alluded to at p. 34. It is, perhaps, partly owing to this power, and partly to its tonic and bracing effects, that this Bark has been found so useful in dropsies, in which it has often proved a decisive remedy; and, at other times, a powerful auxiliary, along with a course of mercury and squills, with the use of Taraxacum, and a grain of opium at night, and once or twice a week a dose of the wild

Elaterium, or bitter cucumber, MOMORDICA *operculata*,* in a solution of tartrate of potash. This is briefly the plan which, in general, I have found most successful in dropsies of various kinds, whether general or partial.

I must here observe, that in *recent* dropsies which come on suddenly from colds and obstructions, we find depletion to be of the first importance, the *sine qua non* indeed. In this species of dropsy, the blood is often observed to be sizy or quite gelatinous.

The remedies just mentioned usually produce a degree of tone and excitement in the system, such indeed, at times, as to indicate bleeding. This condition, arising in adynamical dropsies, in cachectic and leuco-phlegmatic habits, mal d'stomach, &c., is ever to be regarded as the most favourable; and, under such circumstances too, even moderate depletion has been found essentially to promote the curative process, and to contribute to a happy recovery. The diseased action seems by these measures to be subverted; the dormant energies of the vital or nervous system to be roused into action; the vessels to recover their wonted power of contracting upon the sluggish fluids—of propelling them through the veins and capillaries, and of restoring the healthy balance throughout all the corporeal functions.

The results of such cases tend to convince us, that remedial agents, which we are prone to regard as the most opposite and incompatible, not unfrequently prove the only curative ones in many of the most untoward disorders, and those too, both acute and chronic, for similar conclusions may likewise be drawn from those methods which have been found to be the most successful in cases of yellow fever.

It is well known there are a great variety of exceedingly useful remedies amongst the indigenous vegetables in England, but these, in general, appear to be too much neglected by the members of the faculty, who, however eminent in other respects for exalted talents and profound medical skill, seem, on

* This plant grows abundantly on the coast of Essequebo, especially at Cape Batave, the property of Mr. Gilgeous, and at Plantation Richmond, belonging to Mr. Bean.

the whole, to evince rather too exclusive a preference to the chemical or chemico-mineral remedies at present in vogue. Amongst those native plants I should venture to propose the Taraxacum, or Dandelion, as a valuable addition to the compound infusion of Sarsaparilla (p. 12). This plant, the Taraxacum, is acknowledged to be a useful remedy in certain obstructions and disorders of the liver, by some eminent English physicians; and on the continent, in Germany especially, it is employed with the most decided advantage as an alterative in cutaneous affections, and many very obstinate chronic maladies, as I have been assured by Earl Stanhope, the distinguished President of the Medico-Botanical Society, who, to the more renowned and splendid talents of a statesman and a peer of the realm, unites a love of all the sciences conducive to human happiness; attaching however a more particular interest to the advancement of Medical Botany, on which subject he has manifested the most correct views and soundest intelligence: he is moreover sensibly impressed with a conviction that, in the prevalent affection for mere descriptive botany, its more important and scientific objects have been nearly overlooked and disregarded, viz. the application of its principles to useful purposes in medicine, in the arts, and to domestic comforts and economy.

His Lordship being absent (on the Continent) I have used this reference without permission, persuaded however, that he would not refuse his name to a discussion which involves the public good, and the objects of the Medico-Botanical Society.

It may be said that I have here recommended quite a medley of remedies; I do so from a conviction, founded on experience, that, in many of those inveterate chronic maladies (and acute ones also), it is vain to expect, from single remedies, anything more than partial and very limited results. The simplified practice of the present day is not calculated to produce any great impression or benefit in cases like those to which both duty and humanity most frequently call the attention of medical men in the Colonies.*

* The truth of this I doubt not will be recognised by several of the more

This studied simplicity may be less objectionable in more congenial climates, where the human frame inherits a greater share of energy and power to resist the influence of morbid agents;—the aid of medicine is less required where the powers of nature are augmented.

I have known the time when, in the Colonies, the yellow fever, or concentrated remittents, were treated with bark, blistering, and calomel; with others, bleeding and purging was the chief discipline; whilst another class trusted to tisans or lemonade, bathing, and frictions; each pursued their adopted plan most zealously, although nearly all died who took the fever: subsequently, through an improved practice, by an early and diligent application of the different remedies, used in *conjunction*, we have seen the greater number of patients recover,—viz. by potent stimuli and evacuants, bleeding, baths, fomentations, and frictions, under such modifications as the cases respectively seemed to require; not placing too great reliance, however, on *indications*, as of mere appearances of *weakness*, or false signs of *strength*, which is not unfrequently inferred from the presence of convulsive and raving delirium.

We may perhaps attribute to physical causes, and that of climate chiefly, the gradual introduction of those simpler modes of medical prescription in this country, where, in most of the ordinary cases of human ailments, the necessity for medicine is only imaginary.

Although I would not advocate the excessive and absurd polypharmacy of the ancients, I cannot but think that we, at present, err almost equally on the opposite extreme,—from inefficient brevity. It is not merely my humble opinion, but some of the best modern authorities might be cited in support of this position.—See that scientific and truly valuable work, the *Pharmacologia* of Dr. Paris, vol. I, p. 121 and 286, and Sir Alexander Crichton on Pulmonary Consumption, p. 92.

eminent and experienced practitioners in the Colony, especially by my friends Doctors Bell, Buchanan, M'Turk, Gill, Willoughby, and others.

PROPERTIES AND PREPARATION

OF THE

ANGUSTURA BARK.*

THE powerful medicinal properties of the Angustura Bark, and its great efficacy, as in many cases acknowledged by the learned practitioners of Europe for more than thirty years, will, I trust, prove a sufficient apology for my drawing the attention of the Medico-Botanical Society to the Tree from which this drug is obtained.

Having travelled repeatedly, and resided during several months (particularly during August and September, 1816), in the missions of Carony, and sketched a map of the district, I had an opportunity of seeing many thousands of the Bark Trees, and of examining numerous specimens on the spot, deeming it, as a medical practitioner, a duty incumbent on me to improve the opportunity which then offered, of making myself thoroughly acquainted with its botanical characters, well knowing how imperfectly they had been described in the different works then extant. In the course of my observations, I remarked that it would have been impossible for any botanist, however expert, to recognise the Angustura Bark Tree with the assistance of any one of those works, into which its descriptions have all been transcribed from that of Baron Alexander de Humboldt and his scientific coadjutor, M. Aimé Bonpland; and I have no doubt that those learned gentlemen themselves will confess, should these pages ever reach them, that they have fallen into an error by trusting too much to the testimony of others. I was informed by MM. Ravigo and Jose Tarrius,

* The Medico-Botanical Society's Gold Medal for 1829 was awarded to the Author for this Paper.—ED.

with whom the travellers lodged at Angostura, that they did not visit the missions of Carony, but sent an Indian, who returned with a sample (*muestra*) of the leaves, much to their disappointment, without flowers. It is therefore probable that their descriptions refer chiefly to specimens which they observed in the province of Cumana, where *a species* of the genus to which the Angustura Bark Tree appertains, may grow to the size mentioned.

I shall now endeavour to lay before the Society, in as concise a manner as possible, the results of my observations on the external appearance of the plant; the prominent differences between my description and that of Humboldt and Bonpland in their splendid work on the Æquinoctial plants; and, lastly, the medicinal properties I have noticed in the Bark, together with the manner in which it was administered at Angostura.

I was never enabled to learn from what source the illustrious travellers above mentioned derived the name *Cuspare* for the Carony Bark Tree. I resided for three years and a half at St. Thomas de Angostura in Spanish Guiana, whence I made several excursions amongst the missions of Carony, and the tracts inhabited by Indian tribes between them and the mountains of Parime, but never once heard the term used; the vernacular name among the Aborigines of this part of Guiana (the tribe called Guyanos, who had long been subject to the dominion of the Catalonian Capuchin Friars) being *Orayuri;* and among the Spaniards and Creoles, it was known by the name of *Cascarilla* or *Quina de Carony*. The *Cuspa*, however, which is known as a tree of Cumana, has a bark that is bitter, and of a yellow tint; and although it is much lighter, nauseous to the taste, and altogether different from the Orayuri, it is fancied by the inhabitants of Cumana to be allied to the Carony Bark Tree; at the same time they acknowledge its virtues to be much inferior. They usually judge of plants only from some similitude in the bark, leaves, fruit, &c. without regarding the flowers. So, also, in Demerara, some have identified the Carony Bark Tree,

with the *Yaroury* or Paddle Wood, than which, scarcely any two trees differ more, with the exception of a likeness in their barks, both having a yellowish colour and bitterish taste.

It is not in Carony or Guiana then, but doubtless in Cumana, that we are to seek the derivation of the term *Cuspare,* an easy transition from the *Cuspa* of the natives, which is probably of Tamanac origin. I know their great fertility of invention when in want of a name for anything met with in the forest; though I have observed that, among some of the Indian tribes, we find, notwithstanding the numerous confusions they make in many instances, a remarkable degree of intelligence and aptitude in naming trees and plants according to their natural affinities, especially amongst the Arowak tribes: *Wayure* is equivalent to our Orchideæ; *Sirua* to the Laurineæ, and hence come *Sirubali, Sirudani,* &c. by adding various adjective terms indicative of the different species.

As to the Cuspa Tree, for which the Orayuri may have been thus mistaken, I cannot here speak with sufficient accuracy; for having sent from Demerara in 1824, requesting complete specimens, bark and all, of the Cuspa Tree of Cumana, I received the following year, a few pieces of bark, with the important information, or what, no doubt, was thought important, that the leaves and flowers were not used "*como remedios.*"

The Angustura Bark Tree grows in abundance on the mountains in the neighbourhood of St. Joaquin de Carony, between the 7th and 8th degrees of northern latitude. It is also well known in the missions of Tumeremo, Uri, Alta Gracia, and Cupapui, (as correctly mentioned by Humboldt,) which are amongst the southern and back missions of the lower Orinoco, at a distance of 200 miles from the sea. It lines the road side, in many places, between the missions of St. Antonio and Villa Upata. It delights in a rich soil, and flourishes at the height of between 600 and 1000 feet above the level of the sea.

It seldom or never exceeds the altitude of 20 feet, the usual medium being about 12 or 15 feet. The diameter of the trunk, which is tolerably erect, is from 3 to 5 inches.

Branches, scattered, slender, and bending nearly to the ground.

Bark, smooth, externally grey, and yellow within.

Leaves, placed, for the most part, alternately on the branches, composed of three folioles, supported on a common petiole of nearly the same length as the leaflets, slightly channelled on the interior surface. Leaflets oblong, in general from 6 to 10 inches in length, and 2 to 4 in breadth, the centre one being longer than the lateral ones, pointed at both extremities, and connected at the base by very short leaf stalks with the common petiole. They are very smooth and glossy, of a vivid green, and yield, when recently broken from the tree, a strong odour, greatly resembling that of Tobacco, from which circumstance the term *Orayuri* seems derived, as the word *Yuri* or *Yourie* signifies Tobacco in the Arowak dialect. Some of the leaflets are marked with small, whitish, round spots.

Flowers, numerous, borne towards the extreme part of long spikes or racemes, which are both terminal and axillary. Bracteæ, lanceolate, acute, in pairs. The flowers also have a peculiar, not the most pleasant, odour.

Calyx, monopetalous, bell-shaped, five cleft, hairy, rough, inferior, and persistent, green about one fourth of the length of the Corolla.

Corolla, somewhat curved prior to expansion, tubular, bursting from the centre; nearly an inch long; tomentose both inside and out; composed of five unequal petals, two of them being about 1-9th longer and larger than the others, so united at the base as to appear inseparable,* and indeed never separating; these petals are reflex, oblong, obtuse, fixed in the receptacle, and, when faded, breaking off round the germ, leaving a protecting border besides the receptacle.

Nectaria, if they may be called so, five linear leaflets borne at the mouth of the tube, half the length of the petals, each

* I had previously described the Corolla as monopetalous, and I still consider it to be so, although, in submission to higher authorities, I have in the text spoken of it as a pentapetalous Corolla.

bearing at its summit a very minute, round, pellucid glandule, or vesicle, filled with a fluid.

Stamina, two. Before the expansion of the flower, they are found lying towards the inner or inflected side of the corolla, the anthers in the groove of the two longer petals, the tips of the three shorter ones being incurved over them as for protection. Filaments flat, inserted into the two longer petals at the mouth of the tube, considerably shorter than the nectaria. Anthers large, linear, erect, longer than the filaments, four channelled, two celled.

Pistillum, consists of a five-lobed depressed germ, immersed within a coriaceous receptacle; a simple, filiform style, hairy at the middle, longer than the tube, and a capitate entire stigma.

Pericarp, consists of 5 bivalve capsules, of which 2 or 3 are commonly abortive, resembling short legumes, gibbous. When in the embryo state, they are smooth, tender, and semi-pellucid, and when approaching maturity, they gradually acquire a villous rough coat.

Seeds, two to a capsule (one of them often abortive), round, black, the size of a small pea, fastened near together by minute pedicles within a chaffy envelope, which is again surrounded by a strong elastic perisperm or arillus, which is horny, bivalve, bursting with violence, and dispersing the seeds it contains to a considerable distance.

Of the *receptacle*, or that part which may be designated thus; in the early stage of the flower, when the corolla has reached the length of 3 or 4 lines, on detaching it from the calyx, the 5 little ovaries may be observed standing naked upon the receptacle, which is then merely such. It, however, gradually grows up into a rim or circle around the ovaries, in such a manner, indeed, as entirely to cover and envelope them in a tough leathery coat or hood. By the time the flower is ready to open, and at the falling off of the corolla, it entirely conceals them. When again the ovaries commence to emerge, this receptacle dilates, thickens, and remains a supporting base to the then superimposed capsules. When the flower is fully opened, the receptacle

is obscurely 8 or 10 notched. May not these different evolutions be compared to the metamorphoses of insects, or rather to the changes which take place between the chorion and embryo of animals, during the earlier periods of gestation?

The Angustura Bark Tree flowers in vast profusion during the months of August and September, when its elegant, white blossoms add greatly to the beauty of the scenery. Its seeds ripen in October and November.

I shall now proceed to notice the differences existing between the foregoing description and those of anterior and even subsequent writers, such as,—Willdenow, who erroneously formed a new genus, which he called BONPLANDIA, on the plant sent him by Baron Humboldt as the one in question, notwithstanding there already existed a genus of that name, and although the Angustura Bark Tree most obviously belonged to the genus GALIPEA of Aublet,*—Humboldt, and subsequently Humboldt

* In the above opinion, formed in the year 1816, I am confirmed by the following extract from the *Prodromus Systematis Naturalis Regni Vegetabilis* of De Candolle, (vol. I, p. 730,) a work which I have been enabled to consult only since my recent return to England, and to which, after I had nearly completed this paper from the numerous observations I had made 12 years ago, my attention was directed by Mr. Yosy, Sec. Med. Bot. Soc., who having mentioned the subject to Mr. David Don, the learned Librarian of the Linnæan Society, was by him informed of the improved arrangement made by De Candolle.

" DICOTYLEDONES seu EXOGENÆ.

" RUTACEÆ.

" Trib. II. Cuspariæ. D. C.

" XXIV. MONNIERIA.

" XXV. TICOREA.

" XXVI. GALIPEA. *Aubl. Guian.* 2. p. 662. *St. Hil. Bull. Philom.* 1823, *p.* 131. Galipea " et Cusparia, *D. C. Mem. Mus.* 9, 142 et 148. Cusparia, *Humb.* Bonplandia, *Willd. non* " *Cav.* Angustura, *Rœm. et Schultz.* Conchocarpus, *Mik.* Obentonia, *Vel.*

" Calyx brevis quinquedentatus. Petala quinque in corollam hypocrateriformem coalita, seu valde approximata, tubo brevi pentagono, lobis patentibus acutis. Stamina 4-7 hypogyna, petalis subadhærentia, inæqualia, interdum omnia fertilia, sæpius 2 majora antherifera, 2-5 breviora sterilia. Nect. cupuliforme. Styli 5 in unicum mox coaliti et stigma 4-5 sulcum constituentes. Carpella 5 aut abortu pauciora biovulata obtusa cocculiformia sessilia, endocarpio separabili. Semina abortu solitaria. Cotyledones magnæ corrugatæ

and Bonpland, who from the nomenclature adopted by the former in his *Tableau Géographique des Plantes*, passed over to that of Willdenow,—and Messrs. Rœmer and Schultz in their *Systema Vegetabilium*, vol. IV, p. 188, who have described the genus under the name of ANGUSTURA, thereby giving an improper example to future botanists, as the nomenclature of plants should never be derived from the countries or particular places they inhabit.

And, *first*. We are informed in the *Plantæ Æquinoctiales*, by Rœmer and Schultz, and by Dr. Thompson in his excellent London Dispensatory (a work which, from its more general circulation amongst medical men, and even amongst the public at large, ought above all others to be correct), that the tree yielding the Bark in question, is a majestic forest tree from 60 to 80 feet high. As it would appear that Humboldt and Bonpland never saw the Bark Tree at Carony, it is more than probable that the tree which they discovered growing at Santa Fé de Cumana, or New Barcelona, and considered to be indentical with that, of which they had obtained the foliage,

" biauriculatæ. Frutices glabri; folia alterna simplicia aut plurifoliolata, foliolis
" oblongis acuminatis; pedunculi axillares multiflori.

* *Foliis compositis.*

" 1. G. *trifoliata*. (Aubl.)
" 2. G. *Ossana*.
" 3. G. *Lasiostemom*.
" 4. G. *Cusparia* (St. Hil. MSS.) foliis 3 foliolatis, racemis pedunculatis subterminalibus,
" calyce 5 dentato, staminibus sterilibus 3. Hab. in Amer. merid. Cusparia febrifuga, *Humb.*
" *tabl. geogr.* Bonplandia trifoliata, *Willd. act. acad. berol.* 1802, *p.* 24. *Humb. et Bonpl. pl. eq.*
" 2, *p.* 59 *t.* 57. *Kunth nov. Gen. am.* 6, *p.* 8. Angustura Cuspare, *Rœm. and Schult syst.* 4,
" *p.* 183. Cortex Angusturæ, *Offic.*
" 5. G. *heterophylla*, &c. &c."

I have also to acknowledge my obligations for some of the hints here given, with regard to nomenclature, to De Candolle's paper on the Cuspariæ in the Mem. Mus. 9, p. 148, and to the learned work of Messrs. Rœmer and Schultz.

It may be here remarked that *trifoliata* seems not to be a very appropriate specific distinction, since there are no less than four species of GALIPEA already known as *three-leaved*. Besides which, the *three-leaved* SCIURIS or RAPUTIA of Aublet, of which I possess very perfect specimens, appears also to be a true species of this genus. Aublet neglected to give a precise description of the fruit, which is similar in structure to that of Orayuri. I observe that M. De Candolle has, with some hesitation, still made it a distinct genus.

whilst residing at Angostura, is a distinct species of the same genus.

Secondly. Not only does a great disparity in size exist between the leaves of the GALIPEA under consideration, and those of BONPLANDIA *trifoliata,* but the *proportion* in the length of the petiole, when compared to that of the leaflets, is widely different, the leaves of B. being stated to be 2 feet long, and the petiole one or nearly so.

Thirdly. The leaves of Humboldt's tree are stated to exhale, when fresh, an agreeable odour, whereas those of *Orayuri,* when fresh gathered, yield an odour resembling that of Tobacco, which, however tastes, in the general acceptation of the word, may differ, can scarcely be said to be agreeable.

Fourthly. The corolla is represented in the *Pl. Æquin.* as regular; and by Mr. Kunth, one petal is said to differ from the rest; the corolla is evidently irregular, there being two longer and three shorter petals.

Fifthly. The appendages which I had considered as nectaria, by others taken for abortive stamina, are invariably five in number, though stated by some as three (Rœmer), and by others as four (Kunth).

Sixthly. The stamina are said by Kunth to be monadelphous; whereas they are distinctly (separately) inserted into the two longer petals of the corolla. Their number is also greatly at variance with the truth; the *Plantæ Æquinoctiales* and most other works terming it a pentandrous plant. But, it may be said, that those linear leaflets, which I have considered as nectaria, have been reckoned amongst the stamina as being nearly concentric with them. This, we see, has been done, but it does not clear the difficulty, for these bodies are, in *Orayuri,* invariably *five* in number, and, having no anthers, ought not to be confounded with the stamina, whilst the proper filaments with large anthers pass at the same time totally unnoticed; but, even supposing the numbers to correspond, which they do dot, these linear leaflets could never with propriety be regarded as stamina, as the anther is the essential part, and without the anther there is no stamen.

If, besides, these are to be taken for stamens, then the plant is heptandrous, not petandrous. In the description given in the *Plantæ Æquinoctiales* there is, moreover, no mention of sterile stamens.

Seventhly. The seeds are represented as being solitary; whereas, though one of them is generally abortive, there are invariably two, or, at least in the case of abortion, the rudiments of a second.

In the *Orayuri*, I have observed no spur upon the anthers as denoted by Humboldt.

The pistil in BONPLANDIA is said to have 5 stigmata, instead of a simply capitate one.

There are other minor discrepancies in the flower; but the most remarkable appearance in *Orayuri*, and which is not touched upon in the description of BONPLANDIA, is the uncommonly strong and horny arillus in which the seeds are enclosed. This appendage is so elastic that it is difficult to preserve the seeds, the capsule always bursting in the dried specimens. This species of perisperm or seed-envelope, where it obtains, so far from being disregarded, was considered by Linnæus as one of the essential characters of a genus. Witness DICTAMNUS, DIOSMA, COFFEA, &c., but in none is it so notable as in *Orayuri*.

Though concurring, on the whole, with the lucid arrangement, by MM. Auguste de St. Hilaire and De Candolle, of the genus GALIPEA, I cannot agree to the specific name bestowed by those eminent botanists on the Angustura Bark Tree,—the term *Cusparia*, being, as I have before observed, founded in error: it may, doubtless, still refer to another species, whether of Guiana, Cumana, or Brazil. I shall, therefore, agreeably to the suggestion of my friend, Mr. J. P. Yosy, one of the Society's Secretaries, propose the name of GALIPEA *officinalis*; with the following specific description:

GALIPEA *officinalis*, foliis 3 foliolatis, racemis pedunculatis axillaribus et terminalibus, calyce 5 dentato, staminibus 2, nectariis 5 (aliis staminibus sterilibus?)

If in the delightful and fruitful country to which this plant is indigenous, the heat is at times oppressive to the inhabitants, engendering malignant fevers,—this salutary and providential antidote is growing at their doors, and they have acquired a tolerable knowledge of its powers, the mode of employment in that part being to drink a warm infusion in order to induce sweat and diuresis. They often, however, begin with so large a quantity as to evacuate the stomach or the bowels, for it is capable of effecting both, and indeed is often employed for that purpose as well as a febrifuge *(contra-calentura)*, while a decoction of the leaves is resorted to as a bath in fevers and pains of the limbs, arising from colds, in chronic rheumatism, &c.

In the years 1816 and 1817 there prevailed in the district of the Orinoco, and particularly at St. Thomas de Angostura, a malignant bilious intermittent fever, which proved fatal to great numbers of the inhabitants as well as to foreigners. In the latter, indeed, it assumed the form, in many cases, of true yellow fever, with *vomito prieto.*

I had the appointment of *Medico de Sanidad* in the harbour, which is about 260 miles up the river, and had an opportunity of observing this disease in all its various shapes. I had also the care of the Military Hospital in 1817, during the absence of the garrison-surgeon, Don Pablo Gonzalez, and had seldom less than 60 or 70 patients with fever, dropsy, and dysentery. The number of hydropic patients was almost incredible. It was distressing to see them dying along the streets of Angostura from the effects of fever and want of food, the town being besieged by the patriot forces under General Bolivar.

In March, 1817, the mortality increasing, our stock of Cinchona was quite expended, and we had no other resort but to the Quina de Carony, of which there was a large supply in the town. It was prepared nearly as prescribed by those who were there, termed *Curiosos,* or the native doctors.

Into a large jug, containing about six gallons, we put one pound of coarsely-powdered bark, with double, or at least an

equal quantity of brown sugar, filled it nearly with boiling water, and added about four ounces of wheaten bread to hasten fermentation. It was then stopped, placed in the sun, and shaken frequently. As soon as fermentation was well begun, it was considered fit for use, and administered in the quantity of from four to six ounces to the dose, three or four times a day, or oftener, as the case appeared to indicate.

The success of this seemingly odd preparation was very remarkable. The irregular paroxysms of fever were suspended on the second or third day after commencing its use. The amount of deaths from fever was soon diminished to one fourth the number which before fell victims to this dreadful scourge; though prior to this time it was gradually on the increase. In the month preceding the adoption of the Cortex Angusturæ, fifty-three persons died of fever: the month following, there were but fourteen, and several of these were in a dying state when they began the use of this Bark.

I, at first, conceived that fermentation might injure the remedy, but had subsequently every reason to suppose, that the evolution of the carbonic acid rendered the remedy more energetic, and more grateful to the palate and the stomach. Besides this, the acetic acid and small portion of alcohol generated in the fermentation would contribute to extricate more completely the active elements of the Bark, thus improving the remedy by augmenting the solvent powers of the menstruum.

It was not long before I perceived the efficacy of the fermented infusion in dropsy, for many of the patients, afflicted with intermittent and ataxical fevers, were also hydropic; and it was found that their swellings rapidly diminished on the use of the infusion. This induced me to give the same remedy as a tonic to those patients who were simply dropsical, or in whom dropsy constituted the primary disease.—Its power in these cases, proved more striking and decided than any thing I ever witnessed before in medicine. No regular account of these, however, was kept, as it was administered to a great number of patients in and out of the hospital.

In the more severe cases of dysentery, the Dover's Powder was given with a small draught of the infusion, in doses of from five to ten grains, three or four times a day.

We had thus no reason to regret the exchange we had from necessity made; for the Cortex Angusturæ was found to be greatly superior to the Peruvian Bark. Though some patients were averse to it at first, they soon requested to have it, when they saw their companions in sickness recovering so fast under its use. I afterwards received a supply of Cinchona from Trinidad, but made no use of it.

I have also witnessed the best effects from this remedy since my return to Demerara, although we could not at all times procure it in a fresh state, owing to the long cessation of intercourse with the Orinoco.

The Capuchin Friars of Carony had been in the habit of preparing an Extract from this Bark, from the sale of which they derived great pecuniary advantages; but from the trials I made with this, it seems much inferior to the fresh bark or its recent infusion.

The natives also use the bruised Bark as a means for intoxicating fishes *(Barbasco)*, which affords a very singular coincidence with what is mentioned by Dr. Saunders, in the *Philosophical Transactions*, of the same use being made of the Cinchona Bark by the Peruvian Indians.

I am fully convinced, from ample experience, of the virtues of this Bark;—that it is one of the most valuable febrifuges we possess, in the more legitimate sense of the term, at least, it is so, being adapted to the worst and most malignant bilious fevers; while the fevers in which Cinchona is chiefly administered are simple intermittents, for the most part unattended with danger.

Complete specimens of the plant, in the varied stages of its fruitification, have been already submitted to the Society, by which its learned members will be enabled to decide, how far the foregoing details may be entitled to their confidence.

May I be allowed to hope that, with the assistance of the above description and the accompanying plate, the OFFICINAL

GALIPEA may be found on the higher lands (continuation of the Carony mountains) near the falls of the rivers Demerary and Essequebo, and that the Bark may be thence imported in a state much more fit for the European market than hitherto obtained, coming as it does through a circuitous route, the length of which cannot but impair its properties.

I have thus endeavoured to lay before the Society the results of my observations, humble as they are, and hope that, although insignificant in themselves, they will lead to future investigations into the medicinal properties of this valuable remedy, which I am fully convinced are not to this time deservedly known or appreciated.

REFERENCES TO THE PLATE.

1. Corolla just bursting.
2. Corolla expanded with the Stamina and Nectaria.
3. Stamen.
4. Calyx.
5. Pistillum.
6. 7. 8. The Germ in different states of advancement.
9. The longer and shorter Petals compared.
10. The Pericarp.
11. A single seed-vessel.
12. The Arillus or Perisperm.
13. The Seed.
14. Specimens of the Bark from different branches.
15. Ditto magnified.

N. B. All these parts are represented of their natural size, excepting the main branch, which is reduced by one third.

Norfolk Street, Strand,
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J. Wilson, Printer, 6, George-court, Piccadilly.