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Botanical Medicine Monographs and Sundry

**NOTE ON BOTANICAL NOMENCLATURE.**

By JOHN URI LLOYD, PH.M., PH.D.

In the minutes of the Pharmaceutical Meeting for March, I notice that Professor Kraemer prefers "the common names of plants as being less confusing."

While that brief note cannot give the breadth of the subject under discussion, and is liable to misinterpretation, still I feel it to be a duty for me to give my experience in a commercial way with some of these plant names. It is, perhaps, the more a duty since both my brother, Curtis, and myself once strenuously advocated the use of *botanical* names only, having gone so far as, in print, to criticise the use of common names by physicians and pharmacists. But subsequent experience, that is unnecessary for me to record in detail, made it necessary for us not only to acquiesce in the use of certain common names, but to publicly advocate them, and in prices current wherein all the botanical remedies used in medicine are named, we years ago excluded from the list the botanical names of certain remedies, referring to them only in notes. In this connection the Euphorbias and Eupatoriums may be cited as examples, experience having shown that physicians and pharmacists alike have less trouble in distinguishing their common names than carrying the botanical distinctions. But there must be a discriminating selection of common names, for the use of such common names as Indian Hemp, Willow Herb, etc., is to be deplored, since they in turn create confusion.

The result of this experience may be of use to others, and I, therefore, take the liberty to record the names of the drugs to which, in our experience, common names should be applied, as follows:

Asthma Weed, for *Euphorbia pilulifera* (to distinguish it from other species of Euphorbia).

Black Haw, for *Viburnum prunifolium* (to distinguish it from *Viburnum opulus*).

Fragrant Sumach, for *Rhus aromatica* (to distinguish it from *Rhus Toxicodendron*).

Gravel Root, for *Eupatorium purpureum* (to distinguish it from *Eupatorium perfoliatum*).

Horse Chestnut, for *Aesculus Hippocastanum* (to distinguish it from *Aesculus glabra*).

Spikenard, for *Aralia racemosa* (to distinguish it from *Aralia nudicaulis*).

Spotted Spurge, for *Euphorbia hypericifolia* (to distinguish it from *Euphorbia corollata* and *Euphorbia pilulifera*).

Swamp Milkweed, for *Asclepias incarnata* (to distinguish it from *Asclepias cornuti* and *Asclepias tuberosa*).

White Snake root, for *Eupatorium aromaticum* (to distinguish it from *Eupatorium perfoliatum* and *Eupatorium purpureum*).

## LARREA MEXICANA.

BY CLEMENT B. LOWE, M.D.

Last year I received a small quantity of the above-named plant from W. C. Amsden, Ph.G., Class of 1890 of Garner, Iowa, saying that it had been sent by an uncle in California, and requesting information about it. Afterwards, at my request, Mr. Wm. H. Avery, of Los Angeles, California, sent on an ample supply of the drug.

The chemical investigation was carefully performed in the Chemical Laboratory of the College by Wm. E. Krewson, Jr., P.D., Class of 1898.

From the "Botany of California" (Brewer, Watson and Gray), the *Botany of the U. S. Death Valley Expedition*, 1891 and from other sources, much has been learned about this interesting plant. It was first described by Moricaud, *Pl. Nouv. Amer.*, 71 (1833-46) as *Larrea mexicana*, N. O. Zygophyllaceae, Fremont, who met the plant in the Mohave Desert, named it *Zygophyllum californicum*. In 1848 Engleman published the plant as *L. glutinosa*. It was named by the government botanist *L. tridentata*<sup>1</sup>.

It is called by the Mexicans *Gobernadora* and *Hideondo*, and popularly Creosote Bush and Greasewood.

The habitat of the plant is rather an extensive one. It is found abundantly in the dry valleys of Kern County and in the Death Valley of Inyo County, California, and eastward from Walker's Pass and Talhichipi to Western Texas, and southward into Mexico; also along the lower Muddy River in Nevada and the Santa Clara Valley of Utah.

The plant is a diffusely branched, densely leafy evergreen shrub, 4-10 feet high. The leaves and small twigs are thinly spread with a covering of a strongly-odorous resin that closely resembles in appearance ordinary shellac. To the abundance of this resinous matter the plant's popular name of creosote bush is due, for in burning the green wood and leaves a pungent odor is detected and a dense smoke arises. The dead branches remain for many years without decomposing, and, although seldom more than 2 or 3 centimeters in diameter, they furnished the principal fuel to the Death Valley Expedition.

The functions of the resin seem to be to lessen transpiration, and thus to adapt the

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<sup>1</sup> This is the currently recognized name—MM

plant to the dry localities in which it grows. If this coating completely covered the leaves throughout the entire year, all evaporation would cease and the death of the plant would ensue, but it has been found that while the leaves in the winter time seem thoroughly varnished, the spring growth examined in June shows very little coating. As many of the herbarium specimens are gathered at this season of the year during the flowering period, they seldom show the resinous coating conspicuously, as it has not yet developed.

The leaves are nearly sessile; the thick resinous leaflets unequilateral, oblong, 3-6 lines long, with a broad attachment of the midrib, somewhat curved and acute. The flowers are solitary, bright yellow, consisting of five ovate, obtuse, silky, deciduous sepals; five unguiculate petals; ten stamens on a small ten-lobed disk, and a five-celled ovary, the cells about six ovuled. The fruit is globose, two and a half lines in diameter, densely hairy, consisting of five indehiscent one-seeded carpels, which at length separate from the axes.

It is said that no animal of the country will eat the plant. It has various reputed properties. Miners say that a strong decoction will clean amalgam. It is reported that the Indians make a glue from it, with which they fasten the heads of the arrows to the shafts.

Mr. Avery says "that people living in the desert ascribe wonderful properties to it for curing external ailments, as galls and bruises on horses and mules. Pedestrians who become footsore by walking on hot sand claim to have been quickly cured by soaking the soles of their feet in a decoction of this herb."

The following is a summary of the analysis made by Mr. Krewson:

Moisture, 7 per cent.; ash, 7.45 per cent.

Extracted by petroleum ether, 1.87 per cent. { soluble in water, 28.18 per cent.  
caoutchouc, .43 per cent.  
fixed oil and fat, .93 per cent.

Extracted by stronger ether, 17.27 per cent. { resins and  
vegetable acids.

Extracted by alcohol, 7.30 per cent. { resins, chlorophyll and  
vegetable acids.

Extracted by water, 11.71 per cent. { mucilage, 1.92 p. c.; dextrin, 4.33 p. c.;  
glucose, .31 p. c.; sucrose, .12 p. c.

Extracted by alkaline water, 6.24 per cent. { albuminous and mucilaginous  
matters, .13 per cent.

Extracted by acidulated water, 3.17 per cent. (pararabin, 1.59 per cent.)

Starch, 3.21 per cent.

From the analysis, and the report of its uses, it is seen that when used externally it has strong antiseptic and stimulant properties. Its pharmacy has not been studied, but an excellent ointment might be prepared by incorporating a definite amount of

the resin with lard, or by digesting upon a water-bath the leaves of the plant with lard. It is possible that when used internally it will prove a stimulating expectorant analagous to *eriodictyon*.

## ALKALOIDAL CONSTITUENTS OF CASCARILLA BARK.<sup>2</sup>

By W. A. H. NAYLOR, F.I.C.

This paper is intended to be a reply in the main to question No. 12 of the "Blue List" issued by the British Pharmaceutical Conference. The question is: "A re-examination of cascarilla bark is desirable, and particularly with reference to the observation that it contains an alkaloid closely allied to choline." This particular reference to choline is to be found in a paper by Dr. Boehm, an abstract of which appears in the "Year Book of Pharmacy," 1886, page 168.

Fourteen pounds of bark, reduced to NO. 40 powder, were exhausted by percolation with chloroform water containing 3 per cent. of oxalic acid, The percolate was made faintly alkaline by ammonia evaporated at a low temperature to one-fifth of its volume, allowed to become cold, and filtered from the crystallized magma which had separated out. The filtrate was precipitated by an excess of lead acetate, and the precipitate collected on a calico filter and well washed. After removal of the excess of lead by the addition of sulphuric acid, the clear liquor from the lead sulphate was rendered faintly alkaline by ammonia and agitated with three successive portions of ether to withdraw the cascarillin that should be present. The same liquid was next shaken in a like manner with chloroform. The chloroformic residue will be referred to presently. The next stage in the series of operations consisted in acidulating the liquid with sulphuric acid (a large excess of acid must be avoided) and adding to it Thresh's reagent in quantity sufficient to effect complete precipitation. The precipitate, after being washed on a filter until quite free from free iodine, ammonium or potassium salts, was decomposed by freshly precipitated silver carbonate in the presence of water and filtered. The filtrate was faintly acidulated with hydrochloric acid and evaporated over a water-bath and again filtered. This final filtrate was precipitated by platinic chloride, and the precipitate was collected and thoroughly drained. The double compound of base and platinum salt was repeatedly crystallized from water and finally washed with absolute alcohol.

The purified platinum compound crystallized from hot water in dark yellow hexagonal plates, and from weak alcohol in octahedral form. A portion of the product was dissolved in hot water and decomposed by sulphuretted hydrogen and filtered. The filtrate was evaporated to dryness, and the residue purified by re-solution in a sufficiency of warm water and evaporation until a white minutely crystalline chloride of the base was obtained. This chloride, when perfectly dry, was practically insoluble in alcohol, and when heated it melted with intumescence and gave off trimethylamine.

Portions of platinum compound were then ignited, with the following results: It should be stated that they represent the product of three different extractions of the bark. Prior to ignition they were dried at 105° C.

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<sup>2</sup> *Pharmaceutical Journal*, March 19, 1898.

(1)	0.215	of platinum compound left on ignition	0.065	of platinum.	
(2)	0.335	“ “ “ “	0.100	“	
(3)	0.120	“ “ “ “	0.0365	“	
	(1)	(2)	(3)	Theory of Betaine.	Theory for Choline.
	30.23	29.85	30.41	30.28	31.65
	Mean, 30.16 per cent. of platinum.				

That the chloride of this base yields on ignition trimethylamine, indicates that it is allied to choline. That its chloride is practically insoluble in alcohol and melts with intumescence on heating, and that its platinum salt yields a mean of 30.16 per cent. of platinum, prove beyond a doubt that the base in question is not choline, but betaine.

### CHLOROFORMIC RESIDUE.

It was treated with warm hydrochloric acid, 3 per cent., the filtered solution was made alkaline with ammonia and then shaken with chloroform. After evaporation of the chloroform the residue was taken up with the weak acid, and, after the addition of ammonia, was again shaken with chloroform. The product, which was not quite free from color, was alkaline and soluble in alcohol, ether and chloroform. It contained nitrogen. A solution of a portion of it in weak acid was precipitated by ammonia, also by iodine and potassium iodide, Mayer's reagent, Thresh's reagent, cadmium and potassium iodide, and phosphomolybdate of sodium. To the solution of another portion in weak acid the addition of platinic chloride gave a buff-colored precipitate, which was collected and washed free from platinum chloride. When air-dried it was soluble in alcohol and crystallized from hot water in prismatic plates. This alkaloidal substance was also obtained from the impure cascarillin yielded by Alessandri's process. The existence of a base in cascarilla bark other than one allied to choline has been a debatable point, but may now be accepted as a fact. It is believed that this is the first time that the alkaloid cascarilline has been isolated and its platinum compound prepared.

My thanks are due to Mr. John J. Bryant for his assistance in carrying out the operations described in this paper.

## RECENT LITERATURE RELATING TO PHARMACY.

### FLUID EXTRACT OF LICORICE.

Peter Boa (*Pharmaceutical Journal*, February 26, 1898) in commenting upon the method of the British Pharmacopoeia for the above preparation says that it is a process of double maceration with cold water, heating to boiling point, straining, evaporation to a specified gravity when cold, and preservation by spirit. Continuing, he says that two points deserve notice as being characteristic of this fluid extract. One is that it has to be evaporated so that, when cold, it shall have a specified gravity of 1.160 ; the other is that only one sixth of its volume of spirit has to be added, presumably to preserve it. In short, the object is to extract the sweet principle with water, which at the same time takes out albuminous and mucilaginous matter; to

coagulate the albumen by heat and remove it by straining, and finally, for preservative purposes, to add the spirit which still further clears the extract by throwing down part of the mucilaginous matter.

In comparing the product made according to the above process with that made according to the U.S.P. method, he found the latter to compare very unfavorably with the former. It had an acid bitter flavor which quite overpowered the sweetness; while the B.P. extract possessed a sweet mellow taste, free from acidity and with only a faint bitterness. The bitterness of the U.S.P. extract was accounted for by the fact that licorice root contains, besides the sweet principle, an oleoresinous acrid principle and a bitter principle, both of which are more soluble in alcohol than in water, and hence are extracted in larger proportion when alcohol is used.

With regard to the use of ammonia the author carried out experiments which seemed to indicate that it is not only unnecessary in the preparation of the fluid extract of licorice, but that it is distinctly objectionable. It alters the taste of the extract, but it does not appear to increase the sweetness.

Some improvements as to details for the B.P. process are suggested, the principal recommendation being that of percolation, instead of maceration and expression of the drug as now directed. The principal difficulty encountered in percolating the drug with water alone is that the percolate is liable to become acid before extraction is complete. The writer overcomes this objection, however, by adding just a sufficient quantity of ammonia water to the aqueous percolate to preserve its alkalinity while percolation is proceeding, which results in a loss of glycyrrhizin. In other words, he does not use ammonia in extracting the sweetness of the drug, but in preserving the sweetness of the extract.

Finally, in summarizing his views of the subject, he says that water is the best menstruum for extracting the sweetness of licorice; if percolation of a rougher powder were substituted for double maceration and expression of the root in No. 20 powder, as directed by the B.P. formula, the process would be a more skillful one; ammonia might judiciously be employed as indicated to prevent loss of sweetness; and that a slight increase in the amount of alcohol would insure preservation and produce a cleaner extract.

#### KINO.

The conditions which regulate the price of kino and its sources are described by A. E. Bertie-Smith in the *Chemist and Druggist* for March 5th. He says:

The principal ports from which gum-kino is usually shipped are Alleppi and Calicut, and at these ports and at others, such as Tellicherry and Cochin, are settled some three or four old European firms who control the export trade. One or more of these firms have succeeded in getting into their hands the whole of the arrivals of gum-kino from up-country districts, with the result now so well known in the London drug market.

In 1889 and 1890, when I was in Bombay, my firm there were in receipt of regular

shipments of kino from the Malabar ports. I enclose an original quotation and an invoice from the firm of Andrew & Co., of Allepey, from which you will see that in 1889 I made a purchase from them of gum-kino at *16r. 8a.* per cwt., or less than *2<sup>1</sup>/<sub>2</sub>a* (*2<sup>1</sup>/<sub>2</sub>d.*) per pound, which, indeed, is its full value at Bombay.

About 1891 I found none of the above- mentioned shippers in Malabar could or would supply us, and when the price rose so much in London we wrote a letter to Messrs. Andrew & Co., accusing them of cornering the drug, which accusation they never troubled to deny. It was comparatively easy for this firm to get hold of all shipments of kino, they being agents of the British India Steam Navigation Company, running the only steamers, excepting those of the Asiatic Company, which called for cargo at the Malabar ports; and having to issue the bills of lading, they would know when any of the drug was for shipment. Occasionally, however, a "tramp" vessel loads cargo for New York or other United States ports, and this would probably account for kino reaching the London drug market *via* New York.

For some years after the great rise in price at the London drug auctions, kino could be obtained in small quantities in the Bombay drug bazaar at one-third of the advancing London rate, owing to the fact that a certain amount came up from Malabar to Bombay in bugalows (country sailing-boats) shipped by natives to natives, which consignments European, houses would know nothing about.

Until the demand for kino ceases altogether, it will, no doubt, be much more profitable for the monopolists to buy all that comes to hand, shipping only a moiety and destroying the rest, than to ship the quantities formerly exported and sold for just what the London wholesale druggists cared to give at the drug auctions. The monopoly could probably be broken by calling the attention of the Government of India to the present condition of the kino market, for the Forest Department is always willing to advise collectors how to get a better price for produce.

## **EDITORIALS**

### **AMERICAN GINSENG.**

The output of literature concerning the production of ginseng during the past month has been considerable. Bulletin No. 16 of the United States Department of Agriculture is the most important contribution, but two others in Consular Reports for April are of considerable interest; they are entitled "American Ginseng in China" and "Ginseng in Korea." It is interesting to note that both consuls call attention to the fact that the use of ginseng among the Chinese is almost entirely one of sentiment, yet every man, woman and child in China uses it not only as a cure for all kinds of diseases, but also as a preventive against dreaded ailments. It is evident that the American product cannot replace that from Korea, nor compare favorably with it in price, as the statistics for 1896 show importations through Chinese customs of 353,147 pounds, valued at \$656,515 gold, or about \$1.86 gold per pound, while the importations from Korea for the same period amounted to 14,987 pounds, valued at \$247,137 gold, or \$16.50 per pound. This is supposed to represent only about one-half the actual importation, as smuggling in this article is extensively carried on. Another

consular statement is to the effect that the American ginseng readily finds sale at \$3.00 to \$3.50 per pound, and special pieces of the more desirable shapes might be sold at ten times that price. The Bulletin of the Agricultural Department details the commercial history and cultivation of ginseng. Already considerable tracts are under cultivation in this country, and it is evident that whatever future there is in this industry must come from the cultivated article.

#### SUCCESSFUL TEA GROWING IN AMERICA.

This is the title of a paper in the April number of the *Cosmopolitan Magazine*, and the author, Mr. Lafayette I. Parks, makes out a case which justifies the title. It appears that at present the only tea plantation in the United States is situated at Summerville, South Carolina, and is the property of Dr. Charles U. Shepard. Last season upward of 1100 pounds of the finest tea obtainable was marketed, and this year's crop will, he states, amount to more than 2,000 pounds. As long ago as 1877 the Department of Agriculture investigated the possibilities of raising tea in the United States, and "after thorough inspection of Mr. Shepard's tea plantation, Mr. Saunders made a very favorable report, predicting that it would only be a question of time when our farmers will supply sufficient tea for home consumption." Mr. Shepard calls attention to the fact that this undertaking is largely experimental in character; he believes the present indications promise that the venture will prove profitable, although the object in view is only in part industrial. One of the chief commercial difficulties is the relatively high price of labor in the United States compared with that in the countries in which tea is produced at present.

The product has been declared to be equal to any sent to the United States from the Orient. All that has been offered has always found a ready sale. Two photographic reproductions accompany the paper, illustrating the process of picking the leaves, and a field of the plants two years old raised from seeds.

Almost exactly in contradiction to the foregoing, is a statement in the *Chemist and Druggist* for April 2, which asserts that "tea planting in the United States is at present a failure." No authority for this sweeping statement is given, and, since no claim is made that the industry has advanced beyond the experimental stage, and the experiment is still in progress, it is difficult to see how it can be designated a failure.