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Botanical Medicine Monographs and Sundry

NOTES ON SOME INDIGENOUS REMEDIES.

By JOHN M. MAISCH.

Solanum carolinense, Michaux.-Dr. J. L. Napier, of Blenheim, S. C., having heard of the horse nettle as a remedy for epilepsy, has tried a tincture of the berries and considers it a very valuable addition to our active agents in combatting convulsive disorders. The tincture was prepared from the bruised berries and diluted alcohol, using berries enough to obtain a saturated tincture of which a teaspoonful is given every three hours until drowsiness and symptoms of vertigo are produced, when the intervals between the doses should be lengthened. A tincture prepared from the root appears to have the same effect.

According to Porcher (*Resources of the Southern Fields and Forests*) the berries have some reputation among the negroes in South Carolina as an aphrodisiac, and Valentine obtained good effects from the juice of the berries in tetanus.

This plant is found throughout the greater part of the United States, from the New England States to Mississippi and Illinois, and in some localities is quite common. Farther west it is replaced by the very prickly *Sol. rostratum*, and *S. heterodoxum*, Dunal, of which the former has yellow, and the latter purplish flowers.

At the last meeting of the Georgia Pharmaceutical Association (*Proceedings*, 1889, p. 52) a paper was read by Mr. H. R. Slack, Jr., on new remedies which are considered to be of sufficient importance to be admitted into the next pharmacopoeia. Of indigenous remedies the paper recommends the bark of *Rhamnus Purshiana* De Candolle, and the rhizome of *Helonias dioica*, Pursh, for pharmacopoeial recognition. The former drug is extensively used throughout the United. States and in some parts of Europe as a mild laxative, similar in its action to frangula bark.

The second plant is now known by its botanical name *Chamaelirium luteum*, Gray, and by its common names *starwort*, *blazing star* and *devil's bit*. Mr. Slack states that Dr. E. D. Pitman, of La Grange, Ga., considers it to be a tonic, vitalizer of the blood with a special tendency to the uterine functions, a fine emmenagogue, and a corrector of all the secretions of the glandular system; and that it is given in doses of ten grains three times a day, or preferably in the form of tincture, one ounce to the pint, which would require about $2^1/_2$ fluidrachms per dose. The drug has been popularly employed for a long time; Porcher (*loc. cit.*) states that the Indian women used this plant in preventing abortion. The drug was examined by Dr. F. V. Greene (AM. JOUR. PHAR., 1870, p. 250 and 465), who ascertained the active principle to be a glucoside,

chamaelirin, which is a cardiac poison, possessing a depressing and paralyzing effect upon the heart. These researches would seem to indicate that the drug should be used with due caution.

At the same meeting of the Georgia Pharmaceutical Association a paper by J. R. Gregory, of Atlanta, was presented, treating of the manufacture of fluid extracts and tinctures from indigenous plants, and stating that of the official list of 76 fluid extracts, 36, or nearly one-half, are made from indigenous plants, and that they can be profitably gathered and manufactured in Georgia. Among the plants enumerated are the following: *Atropa Belladonna*, *Jateorrhiza Calumba*, *Rhamnus Frangula* and *Gentiana lutea*.

Of these exotics, belladonna is the only plant, I believe, which is cultivated in the United States to a limited extent; and since none of the species have been naturalized here, it becomes of interest to learn whether some indigenous plants are known in some parts of Georgia by names similar to those used for the above officinal drugs, or are similar in appearance to the plants yielding the latter. The roots of indigenous blue-flowering species of Gentiana are used as substitutes for the officinal drug; but of the seven southern species, not one has yellow flowers, like the officinal plant; the nearest approach in color is *G. ochroleuca*, Froelich, which has yellowish white or greenish white flowers. Both this and some of the blue-flowering species are sometimes known as Sampson snake root.

None of the three menispermaceae of the Southern States has roots approaching in size those of the pharmacopoeial calumba. The reference in the above paper, very likely, applies to the so-called American columbo, *Frasera Walteri*, Michaux, s. *F. carolinensis*, Walter.

In the place of the officinal frangula it is not unlikely that the Carolina buckthorn may be used to some extent in Georgia. Prof. Porcher (*Resources of the Southern Fields and Forests*) states that according to Mills a purgative syrup is prepared from the berries of *Rhamnus* (*Frangula*, Gray,) *caroliniana*, Walter. Possibly the bark of the same species may be used in some localities as a substitute for frangula bark or cascara sagrada. The shrub grows westward as far as the Rocky Mountains.

Aside from the non-prickly species of Solanum with entire leaves, the only southern solanacea having some resemblance to belladonna seems to be *Nicandra* (*Atropa*, Linné,) *physaloides*, Goertner, an emigrant from Peru, where the berries enjoy the reputation of being diuretic and antilithic; the fruit is known as apple of Peru. But the leaves, though smooth, differ from belladonna leaves by being of a lighter color, and by having the margin toothed or sinuately lobed, so as to resemble stramonium leaves; hence Lamarck's name for the plant, "*Physalis daturaefolia*".

While it is evident that the reference in Mr. Gregory's paper must apply to four plants different from the officinal ones, among the indigenous plants used for tinctures a garden plant is mentioned, *Calendula officinalis*, Linné, which does not appear to have established itself in this country sufficiently as to deserve a place in botanical works; Chapman, in his new edition of "Flora of the Southern United States," does not mention the plant.

A COMPARATIVE ANALYSIS OF TWO LABIATAE.

Contribution from the Chemical Laboratory of the
Philadelphia College of Pharmacy.-No. 60.
By CARVOSSO O. MYERS, PH. G., AND HENRY R. GILLISPIE, PH. G.

[Read at the Pharmaceutical Meeting, October 15, 1889.]

The medicinal members of the natural order Labiatae are frequently disposed of in the text-books with the statement that they possess the stimulant and aromatic properties and the usual constituents of the order. It was, therefore, decided to take two well-known domestic members, whose composition had not already been well made out, and determine whether they contained any unusual plant constituents and how closely they resembled each other.

Scutellaria lateriflora, which has some reputation as a nervine and in hydrophobia, was analyzed in 1824 by Cadet de Gassicourt (*Jour. de Pharmacie*, vol. x, page 439), who found traces of a bitter principle, a partly volatile material, soluble in alcohol and water, which was not apparent in the original drug, but appeared to be developed by chemical action, volatile oil, a yellow fixed oil, tannin, mucilage, sugar, etc. In the present analysis was found a bitter principle, which was removed from the drug partly by petroleum ether and ether, but completely by alcohol. On removing the alcohol, dissolving the residue as far as possible in water, agitating the aqueous solution with ether and evaporating this ethereal solution, the bitter principle was obtained in the form of stellate groups of acicular crystals.

An aqueous solution of these crystals did not reduce Fehling's solution, but on boiling with a few drops of hydrochloric acid an aromatic odor was developed, and then on neutralizing and testing with the above reagent evidence of sugar was found, showing the compound to be a glucoside. This is no doubt the bitter principle noticed by Cadet de Gassicourt, although it was found in larger quantity than found by him. The partly volatile material observed by the above investigator was not found, unless he referred to the odor developed on boiling the glucoside with acid.

The other more important consituents found were traces of volatile oil, mucilage 4.20 per cent., dextrin 2.90 per cent., glucose 2.42 per cent., ash 14.00 per cent., cellulose and allied bodies 55.28 per cent.

Nepeta Cataria.—No record of any previous analysis of this plant appears to have been published. It was found to contain .3 per cent. of volatile oil, small quantities of fixed oil, a crystalline wax, 5.80 per cent. of mucilage, 12.62 per cent. of dextrin and glucose, 1.30 per cent. cane sugar, 35.44 per cent. cellulose, 12.50 per cent. ash, and small quantities of a bitter principle.

This last constituent was partly removed from the drug by ether, but alcohol was found to be the best solvent. On removing the alcohol, dissolving in water, agitating the aqueous solution with ether and evaporating the ethereal solution a semi-crystalline substance was obtained, which possessed a very bitter taste and an acid

reaction. This substance did not reduce Fehling's solution either before or after boiling with acid and gave none of the reactions of the alkaloids.

These two drugs resemble each other in composition, although it is certain the bitter principles are different. One is a glucoside while the other is probably an organic acid. No distinct evidence of tannin in either plant was obtained.

SOME INDIAN FOOD PLANTS.

III. PEUCEDANUM[1] EURYCARPUM, Coulter and Rose.

By HENRY TRIMBLE.

Contribution from the Chemical Laboratory of the
Philadelphia College of Pharmacy.-No. 61.

[Read at the Pharmaceutical Meeting, October 15,1889.]

This food plant was, like the preceding,[2] furnished me by Dr. V. Harvard , U. S. Army Surgeon at Fort Abraham Lincoln, Dakota, together with the following description.

"The genus *Peucedanum*, as defined by Coulter and Rose in their 'Revision of North American Umbelliferae', is the largest of that, order. Of the 46 species therein described, 9 have edible tubers and are more or less used by the Indians as food plants. Of these 9, the species now under consideration is not one of the best, nor is it probably the worst. It is described as follows: 'Perennial herb, caulescent, branching, a foot or two high, more or less pubescent, frequently from a much enlarged tuberous root; leaves ternate-pinnately decompound, with small linear cuspidate segments; umbel 3-12 raved, with involucels of lanceolate acuminate often united bractlets; flowers white, inconspicuous; fruit broadly elliptical, glabrous, 5 to 9 lines long 3 to 4 lines broad, with wings as broad as body or broader, and filiform dorsal and intermediate ribs; oil tubes large, solitary in the intervals, 2 on the commissural side.' This species is closely allied to *P. macrocarpum (Lomatium macrocarpum-MM)* of Nuttall, in bulb and foliage, and was long considered a variety of it when at all distinguished from it. It is found from the Sacramento river in California, northward through Oregon to Washington and British Columbia. It has not yet been collected east of the Rocky Mountains. It is quite common on the Spokane river, Washington, and is there called 'skelaps' by the Indians who use it as an article of food."

"The thick root expands below into one or more irregularly oblong, often much misshapen tubers, $^3/_4$ to $1^1/_2$ inch in diameter, and covered with brownish black epidermis. On section, they are found to be composed almost entirely of a white, spongy, starchy material which has a pleasant farinaceous taste."

"Of the three species of Peucedanum used by the Spokane Indians, the best, in size and flavor of bulbs, is the 'Chucklusa' (*P. Canbyi*, Coulter and Rose) (*Lomatium canbyi-*

[1] Western No.Amer. *Peucedanum* species are now classed as *Lomatium* - MM
[2] AM. JOUR. PHAR., 1888, p. 593, and 1889, p. 4.

MM), which in their estimation is only second to Camas as native food ; the next best is the 'Tuhwha' (*P. farinosum*, Geyer) (*Lomatium farinosum* var. *farinosum*-MM), and the least, the 'Skelaps' (P. eurycarpum). (?)"

"The bulbs of these species, although very good and palatable when raw, are generally prepared by roasting or baking and then pounding into a flour from which a wholesome and nutritious cake or bread is made,"

The following are the constituents so far as its use as a food is concerned, although the tubers undoubtedly contain small quantities of other compounds; for example, there is present a small amount of a compound of butyric acid, as was determined by allowing the powder to macerate in a warm place for some hours with water, when the characteristic odor of the acid developed.

Starch	35·06	per cent.
Albumenoids	9·63	"
Glucose	3·66	"
Saccharose	1·89	"
Mucilage	3·61	"
Resin, etc	2·68	"
Wax	2·45	"
Volatile oil	0·02	"
Ash	5·06	"
Moisture	10·30	"
Cellulose	25·73	"
	100·00	"

Tests were made for tannin, but with negative results. In 1833 Schlatter[3] discovered in *Peucedanum officinale* a neutral crystalline principle-peucedanin. As the present analysis was for the determination of the constituents which have a food value, and the supply of material by this work was nearly exhausted, I was unable to do more than apply Heut's[4] method for the preparation of peucedanin, to about 25 gms. of the original substance. By this means, however, a small quantity of a distinct crystalline substance was obtained, nearly pure, which, so far as could be determined, was identical with the above compound.

RESIN OF GINGER.

By ROBERT GLENK.

In preparing the "Liquor Zingiberis," or soluble essence of ginger of the National Formulary, the resin is separated by the addition of water to the fluid extract by the intervention of pumice in powder, which acts as a nucleus to attract the precipitated resin and allow of more rapid filtration.

[3] *Ann. Chem. und Pharm.*, v, p. 201.

[4] *Dissertation*, Erlangen, 1874.

On drying the pumice which remains on the filter and exhausting it with warm alcohol a solution of the resin is obtained. On the evaporation of the alcohol a semi-solid residue is left of a black color and an odor slightly differing from that of the root. Its alcoholic solution is of an acid reaction. About two-thirds of the resin is soluble in solution of potassa, and the dissolved portion is reprecipitated on adding an excess of HCl. The portion insoluble in 5 per cent. KOH dissolves in glycerin on slightly warming and is reprecipitated on diluting with warm water. It is almost insoluble in water of ammonia.

Castor oil, ether, acetic ether, chloroform and acetone completely dissolve the resin; carbon disulphide, turpentine and petroleum benzin dissolve only partially. On adding a few drops of tincture of chloride of iron to a dilute alcoholic solution, a gradual darkening in color results. In a solution in five per cent. KOH (1-10) on the addition of test solution of permanganate of potassium, a dark green color is produced which fades in half a minute. With HCl (1.160) no effect is produced. H_2SO_4, sp. g. 1.84, dissolves the resin with a black color; the solution is precipitated by the addition of water, and after washing with water the mass is almost insoluble in alcohol. HNO_3 (1.42) oxidizes the resin rapidly with copious evolution of red fumes forming a straw-colored liquid, and separating a red waxy substance as a product of the oxidation. The solution separated from the waxy substance is rendered much darker in color (yellowish red), but the reactions for picric acid, which it was supposed to be, could not be confirmed. It loses $1^1/_2$ per cent. on being heated in an air-bath to 110°C.

On heating on platinum foil the resin becomes fluid, gives off acrid vapors, and burns with a luminous flame, and finally leaves a minute quantity of ash consisting of Na_2CO_3.

SENNA PODS.

By E. F. SALMON, Pharmaceutical Chemist.

In the Lancet of July 27, 1889, appeared a “Note on the Therapeutic Action of Senna Pods,” written by Dr. MacFarlane, Examiner in Forensic Medicine, University, Glasgow. My attention was directed to it by a member of the medical profession, who requested me to procure some of the pods, and prepare an active preparation of the same, as had already been done for Dr. Macfarlane by Mr. Borland. This I did, and prepared a fluid extract which has since been prescribed and used with very satisfactory results. As probably other pharmacists will be applied to on the same subject, the following notes may be of interest:

The active purgative principle of senna is cathartin, which is a combination of cathartic and phosphoric acids with magnesium and calcium bases; this substance may be thrown out of an aqueous solution by alcohol, first adding sufficient to throw down the gum, albumen, etc., and then an excess to precipitate the cathartin.[5] Two comparative experiments showed that the pods are richer in this substance than the

[5] *Pharmacographia,* p. 219.

leaves, the latter yielding 2 and the former $2^1/_2$ per 2 cent. when treated as above. In addition to cathartin there is found in the leaves a resinous principle and a volatile oil; these are practically absent in the pods.

The pod or legume consists of the two valves of the carpellary leaf, bearing about half a dozen seeds attached by a capillary funiculus to the marginal placentas; each valve consists of three layers, the outer, epidermis, pierced with stomata and easily pervious to water; next, a central mass of parenchyma traversed by the "veins;" it is in this layer that the cathartin is stored; lastly, a fibrous tissue devoid of active principle.

The advantages claimed by Dr. Macfarlane in the use of the pods over the leaves are the absence of nauseous taste and of tendency to cause griping pains, both of which are associated with the use of the leaves. It was shown in a paper printed in the *Pharmaceutical Journal*, March 18, 1876, by C. L. Diehl, that senna leaves, when previously treated with alcohol and then dried, will give preparations which, while possessing the purgative qualities, are tasteless and do not gripe.

The treatment with alcohol had removed the resinous and odorous principles to which the griping and nauseous taste are due, leaving the cathartin unchanged, it being insoluble in alcohol.

The pods being richer in cathartin, and not containing either resin or oil, render them especially well adapted for use as an efficient aperient, and one not too rapid in action.

Cold water readily dissolves out the cathartin from the pod, which it will not do from the leaf, owing to the impervious nature of its epidermis. Accordingly for the preparation of a fluid extract, cold water will be found the best menstruum. Two macerations of the carefully picked over pods, which should also be torn in pieces, will be found to practically exhaust them. The first maceration should be for twenty-four hours, for the second twelve is sufficient. For one pound of pods, six pints of cold distilled water for the first and about three pints for the second maceration, is a sufficient quantity to use, the liquors when strained off to be evaporated to thirteen fluidounces and the usual four ounces (25 per cent.) of spirit added, and after standing a few hours to be filtered, and, if necessary, made up to sixteen fluidounces with distilled water.

This makes an almost black looking liquid of specific gravity 1040 (average), perfectly tasteless, and of which the adult dose is one-half to two fluidrachms, the smaller dose seldom failing to produce purgation.—*Phar. Jour. and Trans.*, October 12, 1889, p. 281.