NOTES ON CHINESE MATERIA MEDICA.

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PRELIMINARY NOTE.

The fragmentary and often unreliable information which Europeans possess of the uses and origin of many interesting substances used in medicine by the Chinese, presents obstacles in whichever way we turn, in the study of Chinese Materia Medica.

Besides the want of accessible information, which the authors have felt so keenly in their own personal investigations, numerous enquiries which are addressed to them individually, from time to time, point out the necessity of the subject being taken in hand earnestly by those near to, or in, the Chinese Empire. For various reasons, the authors have come to the conclusion that these investigations should be systematically taken in hand by themselves, and locally published. They trust that their efforts will be successful in awakening an interest, all over China, in a study offering such immense chances for original research. They cordially invite a sharp criticism of their own work; and will gratefully receive, and thankfully acknowledge, any information given, either in correction of their own observations, or towards promoting an advance in securing the identification of drugs which have so long remained undetermined.

In the present state of our knowledge, it is impossible to adopt, with success, any natural system of classification in dealing with the various *vegetable* substances used in medicine by the Chinese. For the same reason an alphabetical arrangement is not wholly satisfactory.

The authors have been engaged for a considerable time collecting data, which, it was hoped, when grouped with the researches of other investigators, would have enabled them to have published the results of their own labours in a form accessible for easy reference, similar to that adopted by Dr. Dymock in his *Vegetable Materia Medica of Western India;* but they have been compelled to abandon the idea. Dr. Soubeiran and M. Dabry de Thiersant, in their *Matière Médicale chez les Chinois*, have, it is true, resorted to a classification based on a natural system. This work appeared in 1874, and, as pointed out by Dr. Bretschneider,[1] is simply a compilation from Dr. Porter Smith and M.

1. *Journal of the N.-China Branch of the Royal Asiatic Society*, Vol XVI, Part I, p 129.

Debeaux. Since the publication of these works, some further light has been thrown on the subject, and grave doubts, to say the least, are now entertained as to the source of many drugs heretofore ascribed to a particular genus or order.

Another reason why *Notes on Chinese Materia Medica* should appear in an irregular order, is, that a prominent position may be given, at once, in this journal, to certain drugs which have of late excited some interest amongst Botanists and Pharmacologists in Europe.

As often as possible the drugs of a single natural order will be dealt with together. The authors in every case will affix their own number and in addition add the number originally awarded to the *Pên ts'ao* drugs by the late Daniel Hanbury, F.R.S. This latter step has not only been taken to facilitate reference—each of Hanbury's numbers refers to a corresponding number of an illustration[1] in the 本草綱目 Mandarin: *Pên ts'ao kang mu*; Cantonese: *Pún ts'ò kong muk*,—but is also intended to serve as a tribute to the zeal displayed by this scientist in the field of Chinese Materia Medica. It is to be regretted that other European investigators have not followed in the steps of Hanbury as regards this numbering: it would have saved much trouble and confusion.[2]

Whenever a chance occurs, a bibliographical note will be inserted with the description of each drug: it is only right that due acknowledgments should be made wherever we have benefited by the experience of others. Correspondents and those interested in Chinese Materia Medica will also be able to trace the source of the information in every instance.

Only in special cases will a full botanical description of the plants be given.

The authors will also be happy to send to any person, who may be desirous of making enquiries, specimens of drugs of doubtful origin, together with details of the information needed, in order to set at rest any point now in dispute.

1. 'This series of numbers does not exist in the original. When added in MS. it affords a convenient and ready means of reference to any particular figure.' *Science Papers* by D. Hanbury, F.R.S., Ed. J. Ince, (1876), p. 214.

2. 742 plants are figured and described in the *Pên ts'ao*.

1.—Gelsemium elegans, *Benth.*[1]

N.O. Loganiaceæ. *Pên ts'ao*, No. 378.[2]

		Cantonese.	*Mandarin.*
I.	鉤吻	Kau măn	Kou min
II.	野葛	Ye kot	Yeh ko
III.	毒根	Tük kăn	Tu kên
IV.	胡蔓草	U mung ts'ò	Hu mêng ts'ao
V.	斷腸草	Tün ch'eung ts'ò	Twăn ch'ang ts'ao
VI.	黃籐	Wong t'ang	Hwang t'êng
VII.	火把花	Fŏ pa fa	Hwo pa hua

The above names[3] are taken from the *Pên ts'ao*. In the Kwangtung Province it is commonly designated by the fifth of this series, and also by the name 大茶葉藤 M.: Ta ch'a yieh t'êng; C.: Tai ch'a yip t'ang.

Gelsemium elegans has not been alluded to in any previous contribution to Chinese Materia Medica.

Description.[4]—A glabrous, woody, evergreen twiner; stem, near the root, of a greyish-brown colour, having, on the surface, several warty processes; the upper part of the stem green. Leaves, opposite, 2 to 4½ inches long, ovate-lanceolate, very acute at apex, entire, somewhat rounded at base on

1. Syn. *Leptopteris sumatrana*, Blume. *Medicia elegans*, Gardn.

2. Figured also in the Chinese Botanical work 植物名實圖考, M. *Shih wu ming shih t'u kao*; C. *Chik mat ming shat t'u hŏ*, (1848), No. 751.

3. The authors are greatly indebted to the Rev. Dr. Chalmers for much valuable assistance. The romanised renderings of the Chinese sounds will always be given in the manner described by this eminent sinologue in the *China Review*, Vol. XV., p. 158.

4. On account of the notoriety of this plant as an agent in criminal poisoning, both in Hongkong and Canton, full botanical characters are here given.

a petiole 3 to 6 lines long. Stipules, minute, fugitive, easily observed on young branches. Flowers, small, on stalks 3 to 9 lines long, bright yellow, arranged in rather dense terminal and lateral cymes; bracts, few, linear. Calyx, small, persistent, very deeply cleft; sepals, about 1 line long, acute, imbricated. Corolla, rotate, 8 to 9 lines diam., tube 3 to 4 lines long, surmounted by 5 equal lobes 2½ to 3 lines long, inner surface of tube marked with red spots. Stamens 5, inserted on base of corolla tube and alternate with the lobes of the corolla, exserted, but shorter than the lobes; filaments equal; anthers lanceolate. Ovary stalked, on a short gynophore, tapering into a style 3 lines long, two-celled, containing many ascending ovules in each cell; style bi-cleft, each division being again slightly divided into two spreading stigmas. Fruit, a brown, dry, oblong, inflated, membraneous capsule, about ½ inch long, having two opposite deep furrows running from base to apex; dehiscence, septicidal. Seeds, very small, furnished with reddish-brown, reniform and imbricated wings.

The above characters were observed on a specimen gathered on the hills overlooking Mirs Bay, at the back of the city of Kowloon in the Kwangtung province, and on another growing on Mount Gough, on the island of Hongkong; the description of the fruit is taken from specimens gathered on the Canton West River.

Gelsemium elegans may now be seen growing in the Hongkong Botanical Gardens.

HABITAT.—This shrub grows sparingly in Hongkong, but more abundantly on the hills of the neighbouring mainland of China.[1] (Champion, Wright, Wilford, Hance, &c.). In November, 1885, Mr. Westland found a large number of specimens in full flower, climbing round trees to a height of about 12 feet near the Eastern base of Tai Mo Shan.[2] It has also been observed growing luxuriantly on the banks of the West River, about 120 miles from Canton (Ford), near the district of Lo ting, and in ravines on the island of Lan tao, opposite the mouths of the Canton river (Westland). In the *Pên ts'ao* (Chap. XVII) it is declared a native of the provinces of Chekiang, Kwangtung, Kwangsi, Sze-chuen, and Yunnan. According to Bentham, this poisonous plant also grows in Sumatra, being probably identical with *Leptopteris sumatrana*, Blume. It flowers in October, November and December and matures its seeds in April and May.

It differs from the N. American species[1] of this genus in having smaller, scentless, flowers, larger leaves, and smaller fruits and seeds.

PARTS USED, &c.—The root is the only part of the plant used in medicine. As met with in the native drug-shops in Hongkong under the name 葫滿藻 M.: Hu muan ch'iang; C.: U mun k'eung, it consists of thick pieces of the underground stem with or without portions of the *true root* and rootlets attached.

A piece of the *root* in our possession exhibits the following characters. Cortical layer, thick, easily removed from central woody portion, externally of a brown colour, wrinkled, marked at intervals of from ½ to 1 inch by transverse cracks, extending about half way round, and as far as the meditullium. A section of the latter shows the medullary rays stretching through the yellow woody portion in a manner similar to that displayed by the root of *G. nitidum*.[2]

1. *Flora Hongkongensis*, p 229.

2. This is the loftiest (about 3,000 feet) of the hills on the coast of China immediately opposite to the island of Hongkong.

1. In the South. U. States, *G nitidum*, Michaux, (the source of the eclectic remedy *Gelsemin*) is known as Wild Yellow Jessamine or False Jasmine. We prefer to avoid the use of the terms Jasmine or Jessamine in the case of the China species. These names ought to have distinct generic significance, and should be applied only to plants of the genus *Jasminum*, with which *Gelsemium* was formerly classed. The value of popular botanical names will be seriously limited, if their indiscriminate use becomes general.

2. Syn. *Bignonia sempervirens*, Linn.; *G. Sempervirens*, Aiton; *G. lucidum*, Poir. This species is figured in Bentley and Trimen's *Medicinal Plants*, (1880), Vol. III., No. 181.

When cut with a sharp knife, the central woody part shows a waxy section.

There is every reason to believe, that, in the majority of instances, supplies of this drug are brought from the hill sides only as they are wanted. In but few shops can specimens be seen. This fact will possibly account for the scarcity of the plant on the island of Hongkong: the careless collector doubtless destroys a shrub each time he gathers the drug, the root being the only part sought for.

CHEMICAL COMPOSITION.—The active principle of this drug is due to an alkaloid which was first isolated in the Government Laboratory in the course of an enquiry ordered by Her Majesty's Coroner in the early part of 1884. This alkaloid is new to chemical science, and its discovery[1] adds one more to the list of the STRYCHNINE OR TETANUS-PRODUCING GROUP OF ALKALOIDS. Its most characteristic reaction is the production of a deep violet colouration when in contact with oxidizing agents. If the alkaloid is present in very small quantity an observer might confound the colour with that displayed by Strychnine and Gelsemine under similar circumstances. In such a case the observer should apply side by side the same reagents to the alkaloids of *Strychnos nux vomica* and *Gelsemium nitidum* —a practised eye will at once note the difference.

The following table shows at a glance the different colours produced when manganic oxide and sulphuric acid are applied to—

The alkaloid of Gelsemium elegans.	Gelsemine.	Strychnine.
A deep purplish-violet colouration, changing to one of a rich purple hue.	A damask-red colour, changing to a rich green, which latter tint is more marked at the edges.	A deep violet colouration, changing rapidly to purple, and finally assuming a cherry-red tint.

1. *Pharmaceutical Journal*, (3), XVI., p. 95 and 496; also Hongkong Government *Gazette*, Vol. XXXI., p. 344.

These colours are all evanescent, but that displayed by the first mentioned alkaloid is more lasting than the others. The alkaloid of *G. elegans* is *not* associated with *gelseminic acid*, and unlike Strychnine and Gelsemine (?)[1] it will *not* bear the action of sulphuric acid at a temperature of 100° C.

The publication of other chemical features of this alkaloid is reserved for a future paper.

TOXICOLOGICAL NOTE.—In cases of poisoning by any preparation of the root of *G. elegans*, no difficulty should be experienced, in detecting the active principle in the contents of the stomach, provided, first, that the victim had not vomited to any extent after receiving the dose, and second, that death had ensued within a few hours of the administration of the poison. The method adopted in the Laboratory of the Government Civil Hospital is a modification of Stas's alkaloidal process. The viscera is treated with about twice its weight of absolute alcohol, acidified with tartaric acid, and digested for a few hours in a flask at a temperature of about 70° C., cooled and filtered. The filtrate is evaporated to the consistence of a soft extract, and treated with successive quantities of absolute alcohol and water, so as to free the alkaloid, if present, from as much extraneous matter as possible. The necessary evaporations may be conducted at a temperature of 100°C. The extract after the last alcoholic treatment is now dissolved in a little water and filtered, and the solution (acid) after being well washed with ether[2] —until nothing further is removed—is made slightly alkaline with ammonia, and immediately shaken with a suitable volume of ether. The ethereal layer, which now contains the alkaloid, is removed; and this treatment having been repeated, the ethereal solutions of alkaloid are mixed, and divided into two parts. The first half should be evaporated

1. *Pharmaceutical Journal*, (3), XIII., p. 642.

2. This washing of the acid solution with ether ought never to be omitted.

by degrees in a small porcelain basin, and the residue after the addition of a few drops of very dilute hydrochloric acid and water, and being cautiously neutralized with ammonia, may be used for hypodermic injection into small animals—mice or guinea-pigs. The second half should be carefully evaporated to dryness on the inverted covers of three or four porcelain crucible lids and tested, in the manner already described, with sulphuric acid and manganic oxide. In practice it will be found that a small quantity of organic contamination does not interfere with the delicacy of the reaction. If the process has been conducted with that scrupulous care which should invariably accompany toxicological investigations, the *life-test* will most probably furnish confirmatory evidence, in support of that derived from the application of chemical reagents.

Uses &c.—The author of the *Pên ts'ao* states[1] that this drug is never used internally as a medicine, although preparations of the root are recommended to be applied in the treatment of boils and ulcers. According to the Rev. E. Faber, the root is sometimes secretly used internally in the Kwangtung province in certain forms of disease. The evidence of Chinese doctors in Hongkong corroborates this statement. By some, it is regarded as a specific in ring-worm and leprosy.

It is however to its use as an agent in criminal poisoning, that this plant owes its notoriety. It seems to have perplexed coroners in repeated cases that occurred in this Colony between 1867 and 1871.

In 1872, application was made to the Director of the Botanical Gardens, by Dr. Richard Young, the then Superintendent of the Government Civil Hospital, for the identification of a plant—said to have been used in a case of poisoning—which, on examination, turned out to be *Gelsemium elegans*.

We have details of four well-authenticated cases since that date; three of which occurred in Hongkong, the fourth in Canton. The three former are dealt with by Dr. Wharry in an appendix to this paper. The 1874 case is of special interest, from the fact, that, at the Coroner's inquest, evidence was given to the effect, that four mace (=half an ounce avoirdupois) of the root had been used in the preparation of the decoction, which caused the death of an adult male in two hours. The instance in 1884 possesses historical interest, from the fact, that the alkaloid to which the activity of the root is due, was first isolated in the Laboratory of the Government Civil Hospital, and found to possess characters, distinct enough, to allow of its detection, by chemical means, in toxicological investigations.

The following particulars of the Canton tragedy, and of the fate that met the female who was alleged to have poisoned four people, are taken from a translation of the Chinese narrative of the affair by the Rev. E. R. Eichler.[1] The woman appears to have collected from the hills the root of the Tün ch'eung ts'ō (cut bowels grass) or Tai ts'a yip tang (great tea leaf creeper), and to have put it in a hamper in the kitchen, pending a favourable opportunity for boiling it with her *husband's* rice. While her back was turned, a relative seems to have taken the root, and boiled it together with some spinach, in the *family* congee. With the exception of the accused, all, (four in number) partook of the meal and died. The woman was tried by the authorities in Canton, found guilty, and condemned to death by the Ling ch'i process, which, in this instance, consisted in cutting the body of the criminal into a number of pieces, four cuts being made—two on the forehead and two on the breasts—previous to piercing the heart.

PHYSIOLOGICAL NOTE.

At Mr. Crow's request I have jotted down my experience of the Tün ch'eung ts'ō.

When I arrived in Hongkong in February

1. *Pên ts'ao Kang mu*, Chap. XVII.

1. *China Mail*, Sept. 9th, 1886: see also letter of Govt. Analyst in issue of 12th following.

1873 to take charge of the Civil Hospital, I was called on to perform almost the whole of the medico-legal work of the Colony, and thus speedily became acquainted with one of the uses, or abuses, of this plant.

In 1873, I had to examine the bodies of several women who had committed suicide with it, and I learned that the plant was well known to the Chinese, especially to the women who cut grass on the hill sides.

Having no previous knowledge of the plant, and finding no mention of it or its properties in works on materia medica or toxicology, I procured specimens and administered a fresh extract of the leaves, stem, and root, to several dogs.

They all died: the poison rapidly taking effect, and producing giddiness, loss of power in the hind legs, convulsions and death.

Early in 1874 a Chinese *soi-disant* doctor was convicted of manslaughter, for having with fatal effect administered a decoction of Tün ch'eung ts'ò to a Chinese shopman aged about 30 years.

It appeared from the evidence at the inquest that deceased ate a hearty breakfast at 10 a.m. and took a decoction of Tün ch'eung ts'ò at about 3.30 p.m., became giddy, with dimness of sight, loss of power in limbs, irregular breathing, and died in about two hours.

The body was examined 18 hours after death. 'Face somewhat livid: expression disturbed: pupils of fair size, conjunctivæ injected: lips and gums purple: bloody froth running from nose: under surface of body livid.

'Heart, both sides nearly empty: containing a little dark fluid blood, no clots, healthy: lungs, slightly congested, trachœa and bronchi containing bloody froth. Kidneys much congested. Stomach and intestines congested. Brain-vessels full of dark fluid blood, otherwise normal. Spinal cord not examined.'

In January 1884, a Chinese, (Engineer of a launch) aged about 35 years, and his daughter aged about 6 years were poisoned, presumably by the wife. At the inquest the wife stated that after partaking of tea &c., which she had prepared, her husband and daughter became giddy and fell down insensible.

About 5 hours after death, the man's pupils were dilated, and there was considerable congestion of the dependent side of the head and neck: the lower side of the trunk was less congested, and the legs not at all: the conjunctivæ were injected, the lower one most. I was not present at the P. M. dissection in this case, and no record of it was kept.

Mr. Crow obtained an alkaloidal extract from the tea prepared by the wife, and I tried this on two guinea-pigs, weighing 5¼ oz. and 5½ oz. respectively, with the following results:—

12 35 p.m. About 8 drops injected under skin of abdomen: disinclination to move: loss of power in hind legs: inability to hold the head up: convulsions: laboured respiration: partial paralysis of all limbs, with occasional convulsions: convulsions and convulsive breathing.

1.40. Apparently not so feeble: for some time past has kept on his belly: always returning to that position when turned over: almost continuous tremors: (removed to a warmer position), tremors still the same.

1.50. Tremors violent.

1.55. Appears stronger: less tremulous: from this time he improved and recovered completely.

In the second case, at 3.9 p.m. About 12 drops injected under skin of abdomen.

3.20. Began to lose power in extremities.

3.21. Strong convulsions: turned over nearly on to his back: stiffened out: lies on side convulsed.

3.26. Strong convulsions, continuous: (tetanic spasms).

3.35. A few feeble expiring spasms.

From my experience of this plant so far, I judge, that in its physiological action it differs somewhat from *Gelsemium sempervirens*, and more nearly resembles *Strychnos nux vomica*. With further observation, the extent of these

differences may be determined, but there is no facility for this at present in the Civil Hospital.

C. J. WHARRY, M.D.

Government Civil Hospital,
Hongkong, 22nd February 1887.

2.—Strychnos (nux vomica?)

N.O. Loganiaceæ. *Pên ts'ao*, No. 387.

	Cantonese	*Mandarin*
I. 番木鼈	Fan muk pit.	Fan mu pieh.
II. 馬錢子	Ma tsin tsz.	Ma chien tzŭ.
III. 苦實把豆	Fu shat pa tau.	K'u shih pa tou.
IV. 火失刻把都	Fo shat hak pa to.	'Hwo shih k'ê pa tu.

The above characters are taken from the *Pên ts'ao*. The second appears to be the most common name in Hongkong.

In the Chinese drug-shops are to be found, under one or more of the above names, the seeds of a species of STRYCHNOS which are indistinguishable from the Nux Vomica seeds of western pharmacies. The native merchants in Hongkong state that the supply comes from Sze chuen.[1]

These seeds are much larger than those furnished by the fruits of the only two species[2] of STRYCHNOS actually known to grow in China, and although the information given in the *Pên ts'ao*, as to the plant yielding 馬錢子 Ma tsin tsz having been introduced—the date is not given—from some Mahommedan country, points unquestionably to *S. nux vomica*, we must decline to ascribe it to this particular species in the absence of more precise information.

1. See also F. Porter Smith, *Contributions towards the Mat. Med. and Nat. Hist. of China* (1871) p. 156.

2. *S paniculata*, Champ., Hongkong and adjacent continent; and *S. augustiflora*, Benth., Hongkong.—*Flora Hongkongensis* (1861), p. 232. The seeds of these two species will be again referred to in a future paper.

It may not be out of place to mention here, that, *S. nux vomica* is a widely distributed plant, being found[1] in N. Australia, India, Ceylon, Burmah, Siam, and according to Loureiro[2] in Cochin China, where it is known as *Cay cu chi*, a name which is not unlike the Hindustani term for this plant *kuchila*.[3]

The Chinese do not appear to be aware of the poisonous action of these seeds on man. In the Pén ts'ao,[4] contrary to expectation, we find the plant placed in the climbing group, and not in the poisonous section as in the case of *Gelesmium elegans*. The writer states, however, that they are reputed to have a poisonous effect on dogs, and that the tree yielding them grows in 邛州 M. Chung Chow, C. Kung chau, in the province of Sze chuen. They are recommended to be used in colds, fevers, and throat affections: also, in certain cases of abdominal swellings and tumours. It appears also to have been used as a remedy in diseases of the eye, and as an agent in procuring abortion.

Among the Chinese in Canton and Hongkong this drug finds but little favour as an internal remedy. It is mostly used externally, mixed with other drugs, in the form of powders, ointments and other preparations in the treatment of sores and skin diseases.

The authors will be glad to examine the flowers and fruit of the Sze chuen variety of STRYCHNOS yielding these seeds: the *flowers* and *leaves*, should be sent either dried between folds of bibulous paper or preserved in spirit: the *fruit* should be forwarded carefully bottled in spirit or brine.

HONGKONG, February 25th, 1887.

1. *Pharmacographia* (1879), p. 428. This species is figured in Bentley and Trimen's *Medicinal Plants*, (1880) Vol. III., No. 178.

2. *Flora Cochinchinensis*, (1793), Ed. Willdenow, p. 154.

3. Dymock, *Materia Medica of Western India*, (no date), p. 437.

4. *Pên ts'ao kang mu*, Chap. XVIII.