

A REVIEW OF THE INFRASPECIFIC TAXA OF *PAEONIA SUFFRUTICOSA* ANDREWS

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A review of the infraspecific taxa of *Paeonia suffruticosa* Andr. is presented. Three subspecies are recognized, subsp. *suffruticosa*, subsp. *spontanea* (Rehder) Haw & Lauener *stat. nov.*, and subsp. *rockii* Haw & Lauener, *subsp. nov.*, with one further doubtful subspecies. The distinguishing features of all the subspecies are described.

Paeonia suffruticosa Andr. has been cultivated in China for well over one thousand years, and has been developed there into many different cultivars. They have flowers of a variety of forms, from single to highly double, and of many colours from white through pink to red, purple and lilac. Westerners first became acquainted with this peony as a cultivated plant. Many different cultivars were introduced to Europe from China during the eighteenth and nineteenth centuries.

The wild ancestors of these cultivated peonies remained completely unknown in the West until the early twentieth century, when two different forms of *P. suffruticosa* were found growing wild in northern China. Their precise relationship to each other and to the cultivars has remained obscure until the present time, however. A further problem is the exact status of the cultivar grown in gardens under the name 'Rock's Variety' or 'Joseph Rock'. This was introduced to cultivation in the West as seed collected by Joseph Rock in China from plants growing in a lamasery garden. It has until now been uncertain whether this cultivar is identical with any wild form of the species or occurs only in cultivation (see Haw, 1985, 1986).

INTRODUCTION OF CHINESE CULTIVARS INTO EUROPE

The first tree peonies to reach Europe were sent from Guangzhou to Sir Joseph Banks in Britain by Alexander Duncan, a surgeon in the service of the East India Company, in 1787. One with very double magenta flowers was planted at Kew in 1789. A cultivar with double white flowers, flushed with pink and with darker, rose-coloured markings towards the base of the petals, was grown in the garden of the Duncan family near Arbroath until very recently. It is believed to be a direct descendant of one of the original introductions, and was moved to the Royal Botanic Garden Edinburgh in December 1988 (Lauener, 1989).

Andrews' original description of *P. suffruticosa* in 1804 was based upon one of these cultivated plants. This was the first species of peony with woody stems (tree peony) to be described scientifically.

In 1807 Andrews published a description of a second tree peony species, *Paeonia pappaveracea* Andr. This plant differed from *P. suffruticosa* principally in having single

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flowers. It had been introduced from cultivation in Guangzhou in 1802 to the garden of Sir Abraham Hume at Wormley Bury, Hertfordshire. In 1816 it was reduced to a variety of *P. suffruticosa* Andr. as var. *papaveracea* (Andr.) Kerner, and was then (wrongly) considered to be the wild plant from which the cultivated races of *P. suffruticosa* had been derived. This was no more than speculation, however, as no European had at that period ever seen any tree peony in the wild.

DISCOVERY OF WILD FORMS BY WESTERNERS

The first Westerner to find plants of *P. suffruticosa* growing wild was almost certainly William Purdom. Collecting in Shaanxi in 1910, he discovered a rather small tree peony with trilobed, rounded leaflets and pink or purple flowers. He collected specimens which subsequently formed the basis for the description of *P. suffruticosa* Andr. var. *spontanea* Rehder.

In 1914 Purdom joined Reginald Farrer botanizing in south-west Gansu. There, Farrer found a form of *P. suffruticosa* with large white flowers growing wild among scrub on a lightly wooded hillside (Farrer, 1917, 1919). The one specimen which he collected has often been overlooked in the past (e.g. Stern, 1946; Haw, 1986) and its precise status has not until now been determined (see below under subspp. *rockii*).

In 1925/26 Joseph Rock spent about a year living in part of a lamasery at Choni [Jone] in southern Gansu. There he found a form of *P. suffruticosa* with large white flowers growing in a courtyard, and collected seeds which he sent to the USA. Plants grown from these seeds were later also distributed in Europe. From a horticultural point of view they are distinct from other cultivars of *P. suffruticosa*, and came to be grown under the name of 'Rock's Variety' (Stern, 1959) or 'Joseph Rock'. It has, however, always been possible that they are identical with the wild white-flowered tree peony seen by Farrer. Rock himself wrote that 'it looked to me like a wild species' (letter to Stern, quoted in Stern, 1946) and Stern (1946) opined that 'it may be that Rock's paeony represents the true wild species'.

Nevertheless, Stern (1946) did not separate 'Rock's Variety' from typical *P. suffruticosa*. He also included var. *papaveracea* (Andr.) Kerner in the type variety of the species, maintaining only var. *spontanea* Rehder as distinct. This treatment was generally followed subsequently (e.g. Fang, 1958). It remained unclear whether either var. *papaveracea* or 'Rock's Variety' could be considered identical with any wild form of *P. suffruticosa*. Haworth-Booth (1963) considered that Farrer's description of the plants he saw growing wild in Gansu tallied both with var. *papaveracea* and with the plants introduced by Rock.

Pan (1979) recognized three distinct varieties of *Paeonia suffruticosa*, two wild and one cultivated. Apart from the type variety, in which Pan included only *P. suffruticosa* cultivars, both var. *spontanea* and var. *papaveracea* were upheld. The latter was described as differing from the type variety in having bi- to tri-pinnate leaves, the leaflets entire or rarely unequally 2–4-lobed, and large white flowers with petals blotched deep purple at the base. The accompanying line drawing (Pan, 1979: 43) shows a plant with leaves divided into 29 leaflets. The variety is said to grow wild in northern Sichuan, southern Gansu and southern Shaanxi (Tai Bai Shan area), among

thickets under woodland on mountain slopes, at 1100–2800m above sea level, and to be cultivated in Gansu and Qinghai.

It therefore appears that Pan has applied the name var. *papaveracea* (Andr.) Kerner to the wild form with large white flowers, as seen by Farrer. But if this name is to be applied to these wild plants from China, it is necessary to show that they can be identified with the type specimen of the name. Comparison of dried specimens of plants of this taxon collected in the wild in China with Andrews' original plate of *P. papaveracea*, and with living and dried material of plants cultivated in Britain believed to be directly propagated from the plant on which the plate was based, show distinct differences between *Paeonia papaveracea* Andr. and the wild Chinese plants. Similar comparison between the same specimens of wild plants from China and living and dried material of 'Rock's Variety' shows very close similarity. It is therefore proposed to unite 'Rock's Variety' with Pan's concept of var. *papaveracea* and to separate this taxon from *Paeonia papaveracea* Andr., and from the type of *P. suffruticosa*. It is proposed that this taxon and var. *spontanea* Rehder should be given subspecific rank, on the basis of their clear morphological differences and the lack of any distinct overlap in their ranges of distribution. The name subsp. *rockii* is proposed for the former subspecies for which no valid name exists, in commemoration of Joseph Rock.

Paeonia papaveracea Andr. shows many similarities with *Paeonia suffruticosa* cultivars, particularly in its leaf-form. As it is known to have been introduced to British gardens from cultivation in Guangzhou, China, it must be considered a cultivar, probably a seedling showing some reversion towards wild characteristics in the form of its flower. It is proposed that 'Papaveracea' be used as a cultivar name for this plant, in accordance with Article 27b of the *International code of nomenclature for cultivated plants*—1980. These proposals are set out in full below.

As *Paeonia suffruticosa* Andr. 'Papaveracea' and 'Rock's Variety' have often been considered to belong to the same taxon, the differences between them are given in Table 1. Most significant is the large difference in leaf form, which is in fact sufficient in itself to differentiate all the subspecies of *Paeonia suffruticosa* as proposed below (see Fig. 1). However, exceptions are some cultivars of the type subspecies which have leaves similar to one or other of the two wild Chinese subspecies. As the type subspecies was almost certainly derived from hybridization of these two subspecies, with back-crossing and selection over a long period, this is entirely to be expected.

The question has been raised as to whether or not the descriptions in the *Botanist's*

Table 1. Differences between *P. suffruticosa* Andr. 'Papaveracea' and *P. suffruticosa* Andr. 'Rock's Variety'.

	'Papaveracea'	'Rock's Variety'
Leaves:	biternate; no more than 9 leaflets	more or less triternate; 19–31 leaflets
Petals:	white flushed with pink; basal blotches reddish-purple, comparatively pale	more or less pure white, sometimes slightly tinged pink; basal blotches deep purple, very dark
Carpels:	red	whitish
Floral disc:	purple	whitish
Filaments:	whole length purple	only lower half purple

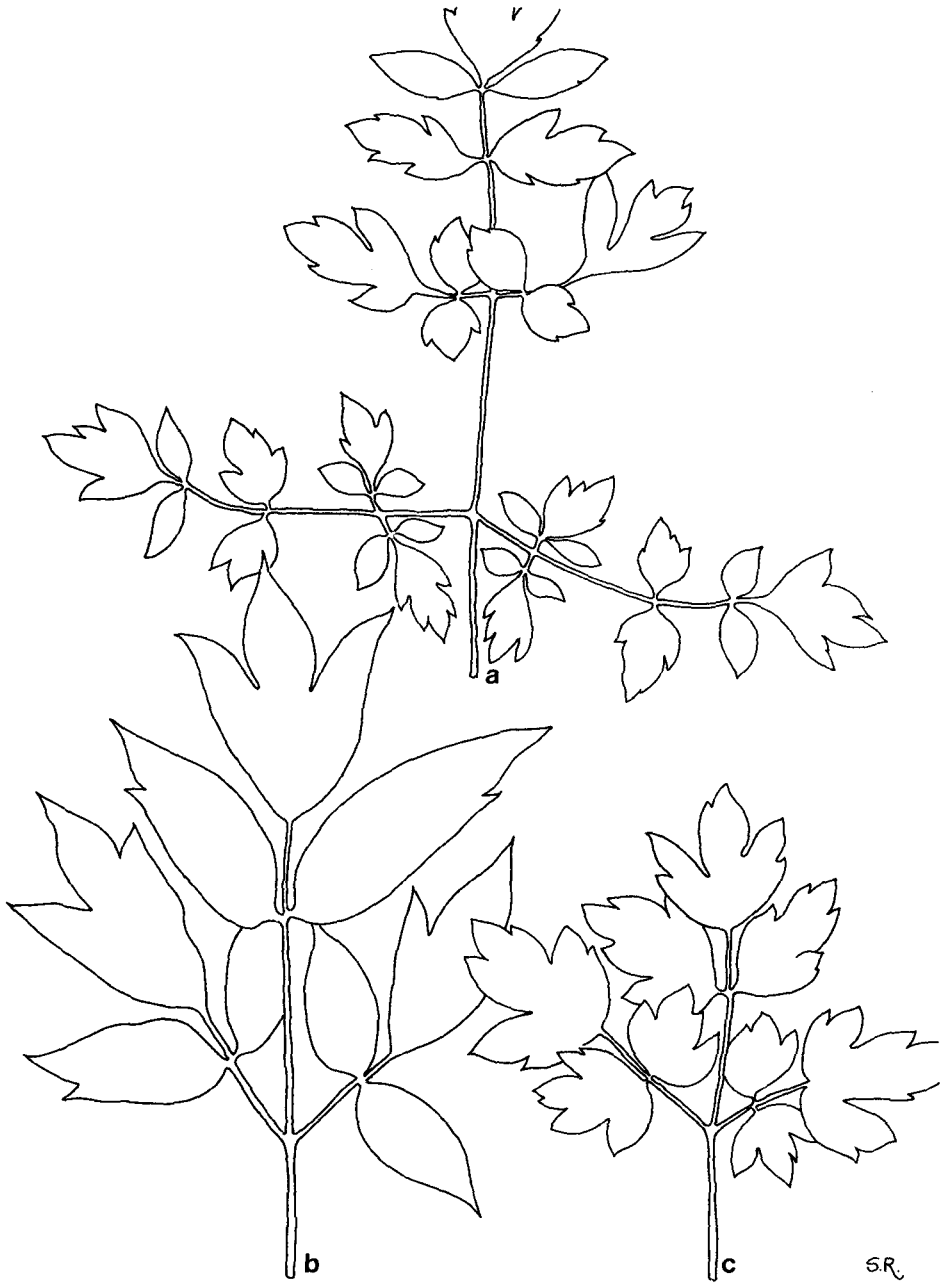


FIG. 1. Leaf outlines (diagrammatic) of *Paeonia suffruticosa*: a, subsp. *rockii*; b, cv 'Papaveracea'; c, subsp. *spontanea*.

Repository should be credited to Andrews. Stafleu & Cowan (1976: 51) state that the 'text of the first 5 volumes was probably written by John Kennedy, that for vol. 6 by A. Haworth, vol. 7–10 by George Jackson'. However, the title pages of the various volumes clearly credit Andrews with the descriptions and it must be assumed that he was responsible for the uniform format and final form of the descriptions in the work. It is therefore proposed to retain Andrews as the authority for *P. suffruticosa* and *P. papaveracea*.

TAXONOMIC TREATMENT

Paeonia suffruticosa Andrews, Bot. Rep. 6: t.373 (1804); Stern, Stud. Gen. Paeonia 40 (1946); Fang Wenpei, Acta Phytotaxonomica Sinica 7(4): 302 (1958); K. Y. Pan, Fl. Reip. Pop. Sin. 27: 41 (1979), excl. syn. *P. decomposita* Hand.-Mazz. Type: Andrews' plate, Bot. Rep. 6: t.373 (1804).

KEY TO SUBSPECIES

1. Leaves \pm biternate, with 9 or occasionally more leaflets, terminal leaflets usually deeply trilobed and also with a few to several shallow lobes, very rarely entire; flowers single to double, with (5–)9–11 or many petals, petals white, pink, red, purple or lilac, immaculate or rarely with a reddish-purple basal blotch, floral disc purple _____ 2
- + Leaves \pm triternate, with (11–)19–31 leaflets, terminal leaflets often entire, sometimes trilobed; flowers single, with 9–11 petals, petals white, with a deep purple basal blotch, floral disc whitish _____ subsp. **rockii** Haw & Lauener
2. Leaflets 9 or occasionally more, ovate to broadly ovate, terminal leaflets usually deeply trilobed, often also with a few shallow lobes, very rarely entire, tips of lobes acute, rachis and petiole more or less glabrous; flowers single to double, petals white, pink, red, purple or lilac, immaculate or rarely with a reddish-purple basal blotch _____ subsp. **suffruticosa**
- + Leaflets 9, ovate or broadly ovate to \pm circular, terminal leaflets deeply trilobed and also with several shallow lobes, tips of lobes acute to blunt, rachis and petiole pubescent; flowers single, petals pink to purple, rarely white, immaculate _____ subsp. **spontanea** (Rehder) Haw & Lauener

Note: Leaves just below an inflorescence are often smaller and have fewer leaflets than those lower down; counts of leaflets given here are based on large leaves from well down on branches. Unfortunately these are often lacking from herbarium specimens.

P. suffruticosa Andr. subsp. **suffruticosa**

Syn.: *P. arborea* Donn, Hortus Cantabrig., 3rd ed., 102 (1804), *nomen nudum*.

- P. suffruticosa* Andr. var. *purpurea* Andr., Bot. Rep. 7, t.448 (1807). Type: the plate cited.
- P. moutan* Sims, Curtis' Bot. Mag. 29: t.1154 (1808). Type: the plate cited.
- P. yunnanensis* Fang, Acta Phytotaxonomica Sinica 7(4): 306, pl. 612 (1958). Type: China, Yunnan, Li-kiang Hsien [Lijiang], Wen-pe-shan, alt. 2500m, shrub 80cm high, flowers white, slightly reddish, 13 iv 1937, *T. T. Yu* 8143 (holo. KUN, n.v.).

Leaves usually with 9 or sometimes more leaflets, variable in shape. Flowers double, semi-double or single.

CHINA: Shaanxi, Wugong, 10 iv 1965, *Wang Zuobing* 19618 (PE); Pehkin [Beijing], Pan Chan [Pan Shan, now within the municipality of Tianjin], 'dans l'enclos de la pagode de Tien Tchen Se' [Tian Cheng Si], v 1889, *Bodinier* s.n. (E); W Hupeh [Hubei], *Wilson* 717 (K); Taiyuanfu [Taiyuan in Shanxi province], pagoda garden, *Licent* 893 (K); Shandong, Lao Shan [near Qingdao], Tai Qing Gong, *C. Y. Chiao* 2849 (K).

JAPAN: 'Prov. Nambu', 1865, *Maximowicz* s.n. (K). Hakodate, *Faurie* 6229 (K).

Numerous other specimens in Herb. PE, E, & K, all from cultivation.

Known only in cultivation; probably derived from hybridization of *P. suffruticosa* subsp. *spontanea* with *P. suffruticosa* subsp. *rockii* with later back-crossing and selection (Yu et al., 1987).

P. suffruticosa Andr. cv. 'Papaveracea' in Bean, Trees and Shrubs Hardy in the British Isles (8th ed.) 4: 81 (1976).

Syn.: *P. papaveracea* Andr., Bot. Rep. 7: t.463 (1807). Type: the plate cited.

P. suffruticosa Andr. var. *papaveracea* (Andr.) Kerner, Hort. Semperv. 5: t.473 (1816).

Leaves with 9 sharply-pointed leaflets, terminal leaflet trilobed (Fig. 1b), flowers single, petals white flushed pink, blotched with reddish-purple at the base, sheath enclosing carpels purple, filaments purple throughout their length.

Cult. spec. from garden of Major A. Pam at Wormley Bury, Herts. (K); cult. spec. from garden of Mr D. Parsons, Broxbourne, Herts., 5 v 1989, *S. G. Haw* 89-001 (E); cult. spec. Herb. Hookerianum 1867 (K); cult. spec. from Jardin de Cels, Orangerie, 18 iv 1822, Herb. J. Gay (K).

Known only in cultivation; the plant on which the type specimen (the plate in Andrews, 1807) was based was introduced by ship from Guangzhou to the garden of Sir Abraham Hume at Wormley Bury in Hertfordshire in 1802.

P. suffruticosa Andr. subsp. *spontanea* (Rehder) S. G. Haw & L. A. Lauener, *stat. nov.* Syntypes: China, Shaanxi, '50 li W. of Yenanfu' [Yanan], 1910, *Purdum* 338 (A—n.v., E, K); Tai-pei-shan [probably Tai Bai Shan], 1910, *Purdum* s.n. (sterile) (A—n.v.).

Syn.: *P. suffruticosa* Andr. var. *spontanea* Rehder, J. Arn. Arb. 1: 193

(1920); Stern, Stud. Gen. Paeonia 43 (1946); K. Y. Pan, Fl. Reip. Pop. Sin. 27: 45 (1979).

Leaves with 9 leaflets, ovate or broadly ovate to \pm circular, usually rather bluntly lobed (Fig. 1c). Flowers single, rather small, purple, rose-pink or rarely white, unblotched.

CHINA: Shaanxi basin, *Yue Tianyu* s.n. (PE); Shaanxi, Hu Xian, vii 1959, *Xian Municipality Bureau of Hygiene Medicinal Products Inspection Institute Survey Team* 0029 (PE); Shanxi, Jie Shan [perhaps error for Ji Shan in S. W. Shanxi], Majiagou, 1450m, flower white, 14 v 1982, *T. W. Liu et Z. B. Zeng* 165 (PE); Chansi [Shanxi], Yuhianghien [Yuxiang], 1500ft, 16 v 1916, *Licent* 1909 (K).

Shanxi and northern and central Shaanxi. Two specimens, *Purdum* s.n. (sterile) and *Xian Municipality Bureau of Hygiene Medicinal Products Inspection Institute Survey Team* 0029, may have been collected from localities in the Qinling Mountains, but the locality information is not precise. If this subspecies does occur in parts of this mountain range, its area of distribution would just touch that of the following subspecies.

P. suffruticosa Andr. subsp. ***rockii*** S. G. Haw & L. A. Lauener, **subsp. nov.** *P. suffruticosa* sensu Stern, Stud. Gen. Paeonia 40 (1946), p.p. et sensu Fang Wenpei, Acta Phytotaxonomica Sinica 7(4): 302 (1958), p.p.; *P. suffruticosa* Andr. var. *papaveracea* sensu K. Y. Pan, Fl. Reip. Pop. Sin. 27: 45 (1979), non Kerner; *P. suffruticosa* Andr. 'Rock's Variety' ('Joseph Rock') hort. Type: China, Kansu [Gansu], 'probably near Wutu [Wudu], (Farrer's Chieh Jo)', [probably iv 1914], *Farrer* (no. 8?) (holo. E). A typo et subsp. *spontanea* differt foliis triternatis vel 2–3-pinnatis, foliolis (11–)19–31, ovatis, anguste ovatis vel lanceolatis, acutis, integris aut interdum 2–4-lobatis, floribus grandissimis, simplicibus, petalis c.10, albis, basi atropurpureo-maculatis, disco carpella vaginanti albido, filamentis basi purpureis, apicem versus albidis.

Leaves \pm triternate or 2–3-pinnate, always with more than 9 leaflets (usually 19–31, rarely as few as 11), leaflets ovate, narrowly ovate or lanceolate, acute, usually entire or sometimes 2–4-lobed (Fig. 1a). Flowers very large, single, with about 10 white petals blotched with deep purple at the base, the disc sheathing the carpels whitish and the filaments purple only near the base, whitish towards the tip.

CHINA: Shaanxi, Nan Wutai Shan, 'vicinity of Kuwanpeshu' [Guwanbaishu], flower white with deep purple centre, 14 v 1939, *T. M. Liou, P. C. Tsoong et C. S. Tien* 127 (PE); SE Kansu [Gansu], near Wang Kia Wan [probably Wang Jia Wan], *Licent* 5006 (K); two specimens grown from Rock's seed cult. in the garden of F. C. Stern at Highdown, 10 v 1938, (K); cult. spec. from the garden of Mr G. P. Baker, Sevenoaks, 26 v 1940, *W. T. Stearn* s.n. (K); cult. spec. at E under ref. no. 59-9781, from a plant at Logan (E).

Northern Sichuan (*vide* Pan, 1979), southern Gansu and southern Shaanxi (Qinling range from Nan Wutai Shan, south of Xian, westwards). Cultivated in Gansu and Qinghai, and introduced to gardens in Europe and America by way of seed collected by Joseph Rock from plants growing in the garden of a lamasery at Choni [Jone], southern Gansu [v. Stern (1946), Stern (1959)]; there is a photograph of the plants

from which Rock collected the seed and another of a plant grown from Rock's seed flowering in Stern's garden at Highdown illustrating Stern (1939)].

DOUBTFUL TAXA

Paeonia suffruticosa Andr. subsp. ***atava*** Brühl in Ann. Roy. Bot. Gard. Calc. 5(2): 114–225, t.126 (1896). Type: Tibet, Chumbi, Tuk Chang, vi 1884, *King's collector* 549 (holo. K).

This subspecies was based on a specimen collected in the Chumbi area of southern Tibet (close to the borders with both Bhutan and Sikkim) in June 1884 by a native collector. A further specimen which appears to be very similar was collected in the Tibet-Bhutan border region in June 1906 (*White's collector* s.n. (CAL, n.v.) drawing at K). The locality data for both specimens is vague and of uncertain reliability. Stern (1946) thought their provenance to be dubious and believed that they might be seedlings from plants cultivated at lamaseries. This was no more than an assumption, however. Both specimens show clear differences from *P. suffruticosa* cultivars, being smaller in all their parts and having leaves divided into as many as 15 leaflets, the leaflets often cleft or rather bluntly toothed, usually with no more than 3 or 4 teeth per leaflet. The flower colour of *King's collector* 549 is given as 'reddish-white' and the petals appear to be entirely unblotched. There are therefore also obvious differences from both subsp. *spontanea*, which never has leaves with more than 9 leaflets, and subsp. *rockii*, which has much larger flowers with white petals blotched with deep purple at the base. Nevertheless the floral disc entirely sheathes the carpels, which are hairy, so that this plant can certainly be placed with *P. suffruticosa*. It is possible that it is a third wild subspecies, but until further specimens of more certain provenance are available its status must remain doubtful.

There is in the Herbarium at Kew a specimen from Bhutan, *Gould* 132, collected in May 1938 between Chang-na Na and Pharo [Paro] at 7750–9600 feet, which has leaves divided into c.19 or perhaps more leaflets and a solitary large flower with blotched petals and hairy carpels. Though it was originally identified as *P. lutea* on the herbarium sheet (later altered), it is clearly a form of *P. suffruticosa*. Its collection locality is not very far from the general area in which the specimens of subsp. *atava* were collected, but it does not resemble those specimens very closely, differing most obviously in having a large flower with blotched petals. It appears to be closer to subsp. *rockii*, but the leaflets are quite frequently lobed, with up to c.5 rather blunt, shallow lobes per leaflet. It is quite possible that it is an escape from cultivation at a lamasery, and unless further evidence is forthcoming to prove otherwise is probably best considered as such.

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