Puzzling over michelias

The garden at Caerhays in Cornwall, which benefits from a mild damp climate, has an exceptional collection of magnolia species many of which were introduced in the early part of the twentieth century. Among the late flowering species which were until recently classified as *Michelia*[1] there is some confusion as to their true identity. CHARLES H. WILLIAMS, the current custodian of this remarkable garden, reports on the history of the introduction of the trees, his observations on their characteristics and the various suggestions as to their correct names.

There are seven specimen michelia trees at Caerhays planted in the late 1920s and in their prime today. Successive generations of the family and head gardeners here have assumed that we had in the collection three *Michelia doltsopa* [*Magnolia doltsopa*], one *Michelia floribunda* [*Magnolia floribunda*] and three rather different michelia specie plants which once had collectors' numbers (sadly lost) but for which we have never had a definitive name or names. Roy Lancaster's earliest visit to Caerhays in the 1960s involved him falling out of a so called *M. doltsopa* and breaking a limb for the benefit of the attending film crew.

Today, the naming of all seven of these specimen plants has been seriously called into question by a variety of experts who, thankfully, do not altogether agree in their identifications. Importantly we now have all Tom Hudson's largely wild collected michelia species growing at Tregrehan to compare and contrast with the more elderly Caerhays plants.

One of the great pleasures of being a gardener who has never made a field trip to China is to sit back, stimulate and thoroughly enjoy an ongoing argument of this sort particularly where there is, to my mind, as yet no absolutely conclusive winner or definitive answer.

1. So we need to delve into the archives here to establish what Forrest and Wilson thought that they had collected in China.

A Forrest collections of *Michelia*.

Number	Name	Date	Altitude	Location
24419	*M. champaca* [*Magnolia champaca*]	June 1924	5,300 ft	In cultivation in Tengyuch
28302	*M. champaca*	October 1932	5,300 ft	In cultivation in Tengyuch

[1] In this article the plants are refer to by the names that they were introduced as; only when they are first mentioned is the currently correct name inserted. *Michelia* is now regarded as one of sixteen sections found within the genus *Magnolia*.

photograph © Charles H. Williams

One of the huge *Magnolia doltsopa* (*Michelia doltsopa*) at Caerhays Estate in March 2016.

Forrest wrote to my great grandfather, J C Williams (JCW), on 18 July 1924:

> *'I only know this species from cultivated specimens of which there are four or five in gardens in the city. That plant in the photograph [sadly undiscovered] being a youngish plant in the second year of flowering and about 25 ft in height. It is quite a good thing; foliage is magnolia like; light green. Bark is light silvery grey and the flowers are very strongly fragrant with a scent resembling a gardenia. As I told you the flowers are fleshy gamboge [yellow pigment] or mango yellow. I have arranged for a crop of seed of the largest cultivated specimen for, as yet, we have no knowledge of the habitat of the species, though I believe it to be a tree of the frontier hill forests.'*

JCW had a plant here 2½ in. high in 1928 but it died. Tom Hudson believes this species is far too tender even for Cornwall and I can find no further reference to this species growing here. Looking at the altitudes at which other species were collected this may well be self-evident.

Number	Name	Date	Altitude	Location
24102	*M. doltsopa* (JCW called it *M. excelsa [Magnolia doltsopa])*	April 1924	8,000 ft	Schweli-Salwin divide
24217	*M. doltsopa* (JCW called it *M. excelsa)*	May 1924	10,000 ft	Schweli-Salwin divide
26258	*M. doltsopa* (JCW called it *M. excelsa)*	March 1925	7,000 ft	Hills northwest of Tengyuch

Forrest describes these collections to JCW as being trees of 30 to 50 ft which grew in open mixed forests with fragrant pale yellow flowers. The trees were very fine and free flowering but inclined to be leggy in habit. *'A good foliage plant if nothing else and free flowering in open situations.'*

As far as can be ascertained JCW definitely did not receive any seed from the first two of these collections and there is no record of the third arriving. Yet, by 1935, JCW records the first flowering of *Michelia doltsopa* at Caerhays.

So the puzzle deepens especially when one notes that Forrest also collected *Michelia excelsa*.

Number	Name	Date	Altitude	Location
25167	*M. excelsa*	September 1924	7–8,000 ft	Schweli-Salwin divide
27710	*M. excelsa*	November 1925	9,000 ft	Schweli-Salwin divide

Forrest saw these 40 to 50 ft trees growing in clumps of 40 to 60 specimens on the margins of forests in mid-west Yunnan. He describes nice foliage and pretty grey bark but a very leggy habit. The flowers are not described and, in 1924, Forrest stated that he had not then seen *M. excelsa* or indeed *M. floribunda* in flower. Again *Michelia excelsa* does not appear to have arrived at Caerhays.

Number	Name	Date	Altitude	Location
26383	*M. manipurensis* [*Magnolia doltsopa*] (George Forrest) (JCW called it *M. excelsa* and Dandy called it *M. doltsopa* in 1927)	May 1925	9–10,000 ft	Schweli-Salwin divide
26580	*M. manipurensis* (George Forrest) (Later called *M. doltsopa* by Dandy)	November 1925	8,000 ft	Hills in west Lung Fang

Forrest describes *Michelia manipurensis* as trees of (also) 40 to 60 ft in height with (again) fragrant pale yellow flowers in mixed forests.

It is therefore not difficult to see from the descriptions of these three species (*M. doltsopa, M. excelsa* and *M. manipurensis*) that they are pretty similar. JCW records in his own hand that he had eight plants at Caerhays of *Michelia manipurensis*. His notes also say that he had grown *M. manipurensis* from Forrest collection number 27707.

Number	Name	Date	Altitude	Location
25319	*M. floribunda*	October 1924	6,000ft	North of Tengyuch
25208	*M. floribunda*	February 1925	6–7,000 ft	Hills around Tengyuch
26239	*M. floribunda*	March 1925	8,000 ft	Schweli-Salwin divide, north of Hotou
27363	*M. floribunda*	October 1925	6–7,000 ft	North west of Tengyuch

Forrest did not see this species in flower until 1925 where he says it has '*not quite the same flower as 25167* (M. excelsa) *but closely allied to it; a deep creamy yellow and very fragrant.*' He describes it as '*a specially fine species 30 to 50 ft tall with a straight grey barked bole and a heavy, well spread head of foliage and abundant fragrant delicately coloured flowers.*'

We do know that Forrest distributed *M. floribunda* to seven gardens and that Caerhays had two plants by 1928. On 17 February 1927 Forrest said these were 26239.

So we have

M. doltsopa	– pale yellow
M. excelsa	– unknown
M. manipurense	– pale yellow
M. floribunda	– creamy yellow

Please note that none are described as 'white' by George Forrest.

B Wilson collections of *Michelia*.
Plantae Wilsonianae published in 1913 records only one definite but unnamed species.

Number	Name	Date	Altitude	Location
4598	*Michelia* sp.	July 1910	1–1,300 m	Eastern Szechwan – Kai Hsien

Wilson states it as a handsome single tree probably belonging to a new species with oblong leaves of 14–15 cm green above and glaucescent beneath. There is no record of the flowers. The tree was 24 m tall with a girth of 2.6 m.

So nothing definite here as to its true identity. However *Michelia wilsonii*, subsequently renamed *Magnolia ernestii* to avoid confusion with the other *Magnolia wilsonii* **does not** appear at all in any records here. **Probably this is**

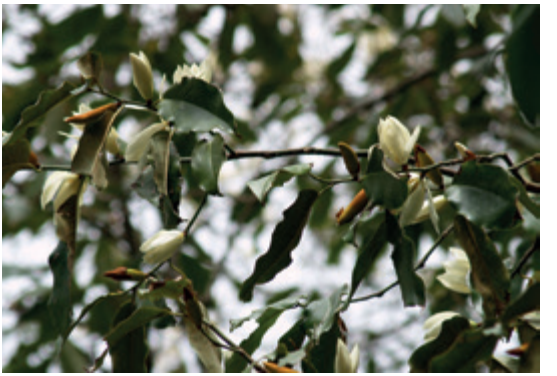
because it was always seen as being too tender from lower altitudes as current reference books suggest.

2. First approaches to the puzzle with the Caerhays plants.

A Flowers.
The three ancient plants here always known as *M. doltsopa* have a vast pro-fusion of creamy yellowish buds fading progressively to creamy white with a touch of green at the base.

photographs © Charles H. Williams

The ancient plant here of *M. floribunda* has **pale** orange-yellow **outer tepals** when first open fading to pale yellow although they are evident only at the very top of a huge tree. The flowers are the same size as *M. doltsopa* but open out much more fully.



The three unnamed original specie michelias all have pale yellowish buds fading to white flowers although one has a hint of darker yellow in its high up buds. The flowers are noticeably smaller and far less profusely displayed than

on the other two original 'named' species. This indeed **might suggest** three <u>different</u> species.

B Leaf forms.
Here the evidence is even more striking. The leaves of the original plants of *M. doltsopa* have a golden brown indumentum on the undersides of the leaves **over a glaucous base**:

M. doltsopa

M. doltsopa

Whereas *M. floribunda* very clearly does not.

M. floribunda

M. floribunda

Nor do the unnamed species.

Leaves from the three unnamed species

C Bark and trunk formations.
Here there seems less variation although the *Michelia doltsopa* have a tendency to be multi stemmed as does *M. floribunda*.

M. doltsopa

M. floribunda

Three unnamed michelia species.

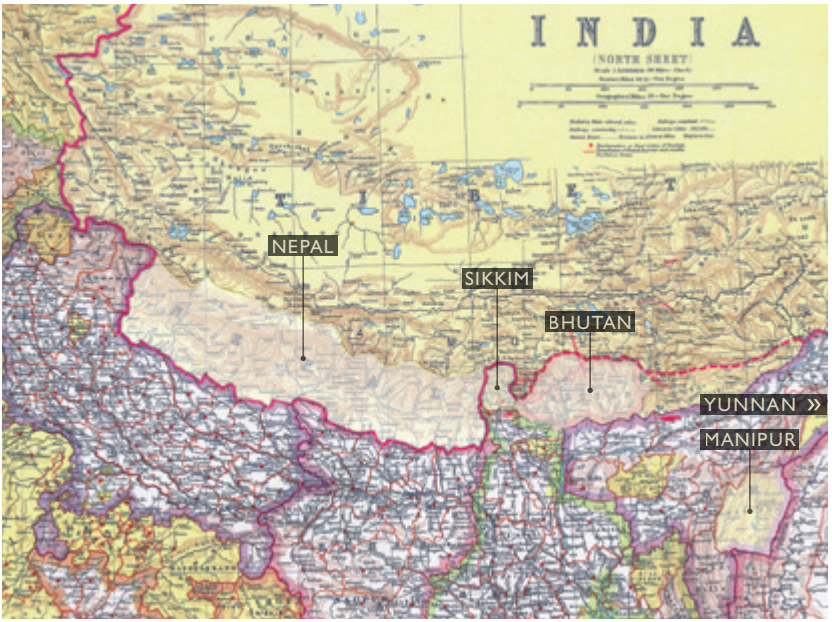
It would therefore seem not at all unreasonable to accept (as we always have) that Caerhays has indeed got at least three wild collected species which are markedly different and therefore correctly named as far as the naming actually goes.

3. So what do the older and modern reference books tell us?

A Volume 164 of *Curtis's Botanical Magazine* published in February 1942 states *Michelia doltsopa* was first discovered in Nepal in 1803. Its name 'doltsopa'

was the vernacular name used in Nepal. The description clearly states that 'stipules adenate to the lower part of the petiole' (ie what we will call the 'leaf scars' on the petiole) but does not say how long these stipules commonly are. The flowers are shown and described as 'white to yellowish, tinged with green towards the base'.

Volume 101 dated 1875 describes and displays *Michelia lanuginosa* (later reclassified as *Michelia doltsopa* var. *velutina*) [*Magnolia lanuginosa*] from Sikkim which was discovered in 1821 and grown in the temperate house at Kew. The description states that the flowers have 18 petals and are pale straw coloured. Perhaps the first attempt to split out separate forms of *M. doltsopa* from different regions although the latest Chinese reference book lists



The distribution of *Michelia doltsopa* from Nepal – Sikkim – Bhutan – Manipur to Yunnan in China.

M. velutina [*Magnolia lanuginosa*] as a separate species?

It would seem that the name *Michelia excelsa* was a mistake caused from another separate nineteenth-century collection which was only corrected in the 1920s although there was some confusion between *Michelia champaca* and *M. doltsopa* in Forrest's earlier collections.

B Dandy wrote an article for the RBG Edinburgh notes published in June 1928 on 'New or Noteworthy Chinese Magnolieae'. In it he makes no mention of *Michelia floribunda* but he includes ALL Forrest's individual collections

numbered here previously as 'Michelia doltsopa' although he allows *M. excelsa* and *M. manipurensis* as names used incorrectly previously by others. In JCW's own hand in this article he notes 'new names' and underlines the six collection numbers growing at Caerhays in 1931 (i.e. *excelsa* and *manipurenis*). Dandy also lists *Michelia lanuginosa* (previously *M. velutina*). This is clearly the moment when *M. doltsopa* became prevalent. Dandy's track record in magnolia reclassification has not however always stood the test of time!

C *Magnolias of China*, published in 2002, covers, pictorially, 62 different michelia species:

i. *Michelia doltsopa* is pictured as having either white or pale creamy yellow flowers. Its huge range is apparently from Yunnan to Nepal, Bhutan and northeast India but the text clearly says 'white' flowers.
ii. *Michelia floribunda* is pictured with smallish pure white flowers but they are shown as opening fuller and flatter than *M. doltsopa*. In colour and flower size it is nothing like the single ancient Caerhays plant.
iii There is no mention at all of *Michelia excelsa* or *Michelia manipurensis* in this book although, admittedly, half of it is in Chinese.

D The book of 'Thai Magnoliaceae', published in Thailand in 2002, is not in English. Nevertheless the pictures show that *Michelia floribunda* is a large, pale, creamy yellow flower opening fully and is broadly speaking a close match to the Caerhays plant of this original name.

This all further confuses rather than clarifies any aspects of the puzzle.

4. A few more observations about the Caerhays plants.

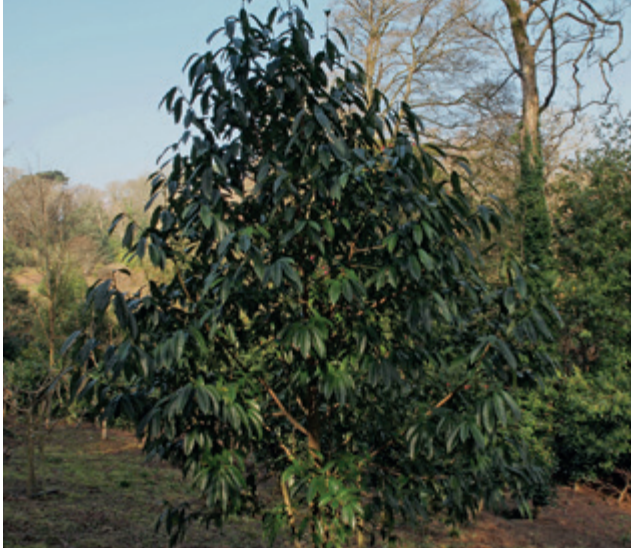
We have readily grown seed from the three original *M. doltsopa* which often produce copious quantities of seed pods in the years when the flowers are not frosted. *Michelia floribunda* and the three michelia 'unknowns' have not set any seed in recent years to my knowledge.

Young seedling plants aged up to 20 or even 40 years of age, planted in my father's and my lifetimes, have two markedly different leaf forms. Some are more sparsely-leaved, with more upright leaves and much slower into flower.

Others flower ten years or so earlier with profuse quantities of flowers and larger leaves resembling their parents more closely.

It may simply be variation in immaturity but, in the early years, you could almost argue that there are male and female plants.

Even more interesting is that the flowers of these ten to 40 year old seedlings all have pure white flowers with no hint of cream or pale yellow. The more mature leaf form eventually resembles their parents but without such pronounced brown-gold indumentum on the leaf and flower buds and none



Above, *left*, a sparsely-leaved *M. doltsopa* seedling and *right*, a densely-leaved *M. doltsopa* seedling, both at Caerhays.

Below, The foliage and flowers of some of the young *M. doltsopa* seedlings.

at all on the undersides of older leaves.

The three unnamed specimen plants are located some way from the three *Michelia doltsopa* in the garden although the *M. floribunda* is closer. In a floriferous spring there is so much out in flower at once that one would not expect there to be much natural or wind cross pollination but the seedlings suggest otherwise. Michelia fragrance may be the answer to the likely cross pollination which seems to have occurred.

Strangely the scent of our *M. doltsopa* is markedly different from the scent of the Hillier's raised *Michelia doltsopa* 'Silver Cloud' which is now propagated in New Zealand. The latter has a distinct cinnamon fragrance which some visitors readily guess correctly.

If michelias in the wild have such attraction to insects this may well go some

way to explaining the fundamental problem of clear identification.

5. The experts turn history on its head?

In more recent years various magnolia experts have pronounced on the puzzles of our seven 90 year old plants based, entirely validly, on their own observations in the wild, scientific knowledge far greater than mine and the plants which they have grown in their own gardens from much more recent plantings and introductions.

The majority of the experts conclude that ALL seven of our Forrest originals are, in fact, simply forms of *Michelia doltsopa*.

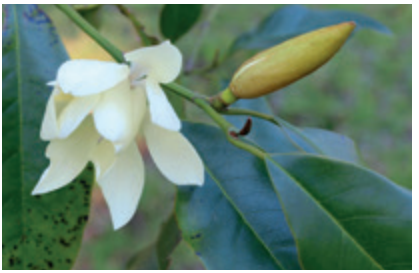
The basis for their argument has led myself and Jaimie Parsons, the head gardener, into floods of happy laughter.

This is that the 'scar' on the leaf petiole on all *Michelia doltsopa* is around 20 mm but around 50 mm on *Michelia floribunda*. If you follow this argument at Tom Hudson's wonderful collection of michelias at Tregrehan then you *can* see these differences in the petiole scars between *M. floribunda* and *M. doltsopa*. Tom's plants of the two species are pretty much identical in every other respect.

photographs © Charles H. Williams

Top right, *Michelia doltsopa* from Tregrehan with 20mm leaf scar.
Middle, *Michelia floribunda* from Tregrehan with 50mm leaf scar.
Right, *M. doltsopa* and *M. floribunda* leaf scar comparison.

photographs © Charles H. Williams

A young *Michelia doltsopa* tree at Tregrehan.


A young *Michelia floribunda* tree at Tregrehan.

When you compare these pictures to those of the Caerhays plants earlier in this article can you really base the identification of two species *simply* on leaf scar length while ignoring history, flower colour, habit and performance? I have to admit to rather doubting this simple conclusion. Furthermore, in more mature branches on the older trees at Caerhays you can find plenty of leaves of both species with no leaf 'scar' at all.


Michelia floribunda and *Michelia doltsopa* from Caerhays with no obvious leaf scar at all.

Meanwhile the minority of experts suggest (without the benefit of the historic evidence) that our three original *Michelia doltsopa* are, in reality, *M. manipurensis*. I can, very easily, go along with this argument even if Chinese botanists no longer recognize this as a species.

However, I will take some persuading that our clearly yellow flowered *M. floribunda* is in fact also a *M. doltsopa*.

In looking at the reference books and at the Tregrehan collection I wonder too how one really identifies the very similar *M. cavaleriei* (*Magnolia cavaleriei*), *M. lanuginosa* (*Magnolia lanuginosa*), *M. macclurei* (*Magnolia macclurei*) and *M. maudiae* (*Magnolia maudiae*) when there is such variation in leaf forms in the same species collected from different locations.

Conclusions – does a complex puzzle actually still end in a happy mystery?

I appreciate this may all be desperately dull for the vast majority of woody plant enthusiasts and probably appears very amateur to the professional magnolia botanists but it remains a great source of pleasure and amusement here as there is probably no definitive answer at least in the absence of formal DNA testing which would spoil the fun.

My guess at the conclusion is based on George Forrest's letter to Bodnant in 1931 where he writes 'one of the finest large trees [near Tengyueh] was *Michelia manipurensis* 60 to 80 ft in height, yellow with butter-coloured blooms scenting the air for hundreds of yards around'. This readily describes the three original *Michelia doltsopa* at Caerhays **at least as the flowers first open**.

The argument then becomes whether all *Michelia doltsopa*, with such a large geographic range in the wild, can actually be considered one species or whether *M. manipurensis* is a subspecies or a separate species altogether? I would like to see it as the latter.

As the *Botanical Magazine* points out *M. doltsopa* and *M. floribunda* overlap as species in the wild so hybridization is quite likely. Leaving aside the length of the petiole scar (which is far from obvious or conclusive in more recent published reference book photographs) is it not possible that *M. floribunda* is actually a form of *M. doltsopa* as well?

I wonder again if the length of a scar can really be the sole determinant of two near identical but clearly very varied species? I look forward to the puzzle moving forward with contributions from others.

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