

## NOTES ON THE NOMENCLATURE AND TAXONOMY OF *PSEUDOLARIX*

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The genus *Pseudolarix*, the Golden Larch, has recently been the subject of dispute in both its nomenclature and taxonomy. The following notes are presented as an attempt to clarify the situations.

The Golden Larch, known as Chin Sung (golden pine) or Chin Chien Sung (golden coin pine), is native to China and grown there as a cultivated tree. Its botanical discovery was due to the effort of Robert Fortune who first noticed the tree grown as pot plants in Shanghai and later, in 1853 collected the tree in the wild in the eastern part of Chekiang province. His material was sent to England and Lindley believed it to be the Japanese Larch which he had effected the name *Abies Kaempferi* on the basis of *Pinus Kaempferi* Lambert a few years earlier (in 1833). Although Lindley made this combination, he had not seen any specimens and was not actually familiar with the Japanese tree. The Chinese tree is a very different plant and Lindley's misidentification led into much confusion subsequently.

Fortune himself recognized early the fact that his plant is not a fir but more closely related to the true larches. He mentioned in his work the name *Larix Kaempferi* but the credit of this name belongs to Carrierè 1856 for the true Japanese Larch, now known as *Larix leptolepis* (Sieb. & Zucc.) Sieb. or as *Larix Kaempferi* (Lambert) Carrierè. In 1858, Gordon, recognizing the distinctiveness of the Golden Larch from the true larches, established the genus *Pseudolarix* (false larch) and called the species *L. Kaempferi*. Mayr, in 1890, realizing that the epithet *Kaempferi* was wrongly applied here, changed it to *Pseudolarix Fortunei*. In the meantime, not satisfied with the name *Pseudolarix*, Nelson, who considered the tree as a species of larch, gave the name *Larix amabilis* in 1866. As this specific epithet was older than the epithet *Fortunei*, Rehder changed the name into *Pseudolarix amabilis* (Nelson) Rehder in 1919 and this is the name since generally adopted for the species.

Recently, Moore (1965), believing that *Pseudolarix* as a name does not have a type since the species on which it is based, *Pseudolarix Kaempferi*, is a misapplied one, proposed the new generic name *Chrysolarix* and called the species *Chrysolarix amabilis* (Nelson) Moore. Bullock and Hunt (1966), however, consider this action unjustified and that Moore's *Chrysolarix* is superfluous. Subsequent discussions between Moore (1966) and Bullock (1966), each side defending its own view, seem to put the case into a deadlock.

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In reviewing over the history of the nomenclature of the genus and the articles in the *International Code of Botanical Nomenclature*, I am inclined to agree with Hunt and Bullock in considering the name *Pseudolarix* valid. The nomenclatural type of a generic name, as pointed out by these authors, is a species while the nomenclatural type of a species is a specimen. Bullock and Hunt are of the opinion that Moore appears to have failed to distinguish this basic difference in typification. Bullock says correctly that "The species described by Gordon is the Chinese Golden Larch and that species, whatever its correct name may be, is the type of the generic name *Pseudolarix*". In this case it is a species to which a wrong name was applied. But Gordon clearly described the Chinese Golden Larch and based his description on the material assembled by Fortune. He did not clearly indicate everything according to the modern standard and practice, but it is not reasonable to expect him to follow every detail as provided under a Code published a century later. There is not the least of any doubt that the type species on which *Pseudolarix* is based is the Chinese Golden Larch, both as to description and to type collection.

In the Article 7 of the *Code* as quoted by Moore it says "A nomenclatural type (*typus*) is that constituent element of a taxon to which the name of the taxon is permanently attached, whether as a correct name or as a synonym". Then Note 1 to this article says "The nomenclatural type is not necessarily the most typical or representative element of a taxon; it is merely that element with which the name is permanently associated". There is no question about the identity of the species with which the generic name *Pseudolarix* is associated, though the species, at the time when Gordon established the genus, carried a misapplied name. However, there is no provision in the *Code* specifying that the type species for a genus should carry a valid name when the genus is first named.

The *International Code* is a legislation that has no means of enforcement. In a disputable case like this there is no tribunal to pass down a decision. It is up to the botanists using the nomenclature to decide which name to adopt. In a case like this, it is important to remember that the main purpose of the *International Code* is to stabilize nomenclature. It expressly states at the very beginning that the aim is at fixity of names and all useless creation of names is to be avoided.

In all writings on *Pseudolarix*, the genus is considered as monotypic. However, in 1944, de Ferré of Toulouse (de Ferré 1944) proposed a second species, *P. Pourtetii* de Ferré, to be segregated from the original concept of the species. This action has not been followed, nor taken notice, by other taxonomists in the ensuing years. For instance, the authors discussing the nomenclature of the genus mentioned above did not seem to be aware of the existence of such a species or name. There is no comment on the merit or dismerit of such a differentiation. The Toulouse school on Gymnosperms, however, maintains the view that the genus is actually composed

of two distinct species. In the recent most extensive treatment on the gymnosperms, Gaussen (1966) continued on the recognition of the two species, elaborating on their distinctions. The two species are called by him as well as de Ferré *P. Kaempferi* (Lindley) Gordon and *P. Pourteti* de Ferré. *P. Kaempferi* is now considered by nearly all other taxonomists as only a synonym of *P. amabilis* (Nelson) Rehder.

The only notice of this new species described by de Ferré, so far as I am aware, is the brief comment made by Harrison in 1967 (Harrison, cf. Dallimore & Jackson 1967), in which he considers de Ferré's supposedly distinct species may be only a juvenile form of the species.

In the following analysis of the case, the name *P. Kaempferi* as adopted by de Ferré and Gaussen is used for the sake of discussion with the understanding that this name is now actually superceded by *P. amabilis*.

The basis for the differentiation of the two species, as first proposed by de Ferré and later upheld and elaborated by Gaussen, is both morphological, anatomical as well as geographical. Morphologically the main differences are found in the foliage, the larger and thinner leaves in *P. Pourteti* with very papillose epidermis and the narrower and shorter and thicker leaves in *P. Kaempferi* with slightly papillose epidermis. The dimensions of the leaves as given by the authors are as follows: (length by width by thickness in mm.)

	<i>P. Kaempferi</i>	<i>P. Pourteti</i>
de Ferré	35 by 1.5 by 0.45	50 by 2 by 0.4 (30-80 by 1.5-2.3 by 0.2-0.6)
Gaussen	35 (37) by 5 by 0.4	30-50 (80) by 2 by 0.4

The figures given by the two agree with each other in general with the exception of the width of 5 mm. for *P. Kaempferi* given by Gaussen; this is most probably an error for the figure 1.5 mm. as given by de Ferré.

From these figures it is quite clear that the ranges of differences between the two entities do not amount to any appreciable amount to warrant differentiation even at the subspecific level.

The shape of the epidermal cells is given special emphasis by de Ferré. Several other anatomical features are also used by her to differentiate the two species, such as number of resin canals and number of stomatal lines. In her studies, however, no collections on which the analysis was made are given, and thus there is no way to verify the variation of these features among the different individual collections, and these variations do not actually seem to be consistent enough for taxonomic differentiation.

In general, anatomical characteristics, even if they are consistent and clearly marked, will not be sufficient to differentiate taxonomic entities by themselves without being coordinated with other morphological or geographical characteristics.

In the case of the shape of epidermal cells used by de Ferré, and possibly some of the other anatomical features also, these characteristics are probably individual variations subject to change by the age of the leaves, ecological conditions of the trees, or even mode and method of preservation. As de Ferré described her material from vegetative specimens only, it is quite likely that these specimens represent a juvenile form of the species as suggested by Harrison (cf. Dallimore & Jackson 1967).

de Ferré also tried to justify her separation of two entities on geographical grounds, *P. Kaempferi* as of the east and *P. Pourteti* the west, but with overlapping ranges (see Map 1). In the case of her *P. Pourteti*, the locality A, referring to Tientai mountain in Chekiang on the basis of the Chiao collection, and B, referring to Lushan Mountain in Kiangsi based on two David collections, are more or less correctly placed. The locality C, based on Handel-Mazzetti's record in Hunan is not placed in the right location. This locality, the Hsikwangshan, northeast of the city Hsinhwa, lies approximately in the center of the province, much further west than de Ferré's uncertain placing of it along the eastern border of Hunan in her map.

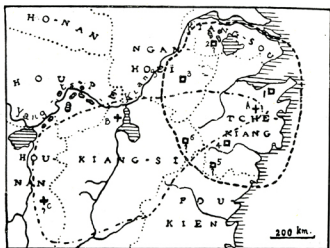


FIG. 18. — Localisation des échantillons étudiés.

+ *Pseudolarix Pourteti*; □ *P. Kaempferi*.

--- Aire de répartition probable de *P. Pourteti*.

- · - - Aire de répartition probable de *P. Kaempferi*.

Map 1. Map of *Pseudolarix* as given by de Ferré with the original legends.  
(For discussion of added labels A, B, C and 1, 2, 3, 4, 5, 6, see text).

About those localities defining the range of *P. Kaempferi*, de Ferré cited no collections nor gave any references. Most probably she relied primarily on Price's summary of our knowledge about the species in 1931 (Price 1931). Her locality 1 is clearly Ningpo, which must be the location she placed Fortune's original collections. Actually Fortune's discoveries of the tree were made in the Tientai mountain, southwest of Ningpo. This is the same location as A for *P. Pourtetii* given by de Ferré basing on the Chiao collection. Fortune clearly stated in the narrations of his journey that the tree was first found in the mountains a day's journey southwest of Ningpo at the Tsang-tsin Monastery and later again at the Quan-ting Monastery 20 miles southwest of the first location. These localities are actually in the Tientai Range and not in Ningpo.

Thus this easternmost station of de Ferré's *P. Pourtetii* is exactly the same location as the type collections of *P. Kaempferi* made by Fortune. That the two supposedly different species of de Ferré and Gaussen are actually the same is beyond doubt.

Among the other locations of *P. Kaempferi* given by de Ferré, 2, 3, and 4 apparently refer to the records given by Ching in Price's note. They are the southwest of Kiangsu, Hueichow in Anhwei and the southwest of Chekiang respectively. No. 5, entered with a question mark, is probably the reference in Price based on Metcalf's correspondence saying that the tree has "been found in S.W. Chekiang rather near the border of Fukien". Actually from Metcalf's own publication later (Metcalf 1942), this statement is not based on his own observations but instead on collections made by Ching which Metcalf cited. Thus Price inadvertently gave these same Chekiang locations twice, without knowing they are identical, and this was followed by de Ferré.

The strangest case is the disposition of location 6 made by de Ferré. She refers to a collection, with which no collector's name is given from the mountain "Kou-Lin" in Kiangsi province made at 1300 m. altitude, in her discussion of the range of *P. Kaempferi*. She was not able to locate this place on the map of China. She noted that such a high altitude exists in either the northeastern or the southwestern part of the province. As a northeastern location will conveniently fit it into her idea that the species in question is confined to eastern China, she accordingly placed this location, though still accompanied by a question mark, along the eastern border of the province.

The locality in question is Kuling, a place on the Lushan Mountain and a famous resort settlement for summer residence. This is the same as the locality A of de Ferré's own *P. Pourtetii*, its type locality, and also a locality which she considers to be exclusively for *P. Pourtetii* and definitely out of the range of *P. Kaempferi*.

From the above it can be seen that not only the geography of the area in concern is very unclear to de Ferré, she took the attitude of arbitrarily placing

various collections to confirm her preconceived idea about the taxonomy of these two supposedly different species. From the standpoint of its geographical distribution, there is no real basis to justify such a differentiation in the genus *Pseudolarix*. As there is also no morphological ground to classify the populations into two distinct entities, we can only conclude that the genus *Pseudolarix* is a monotypic one and that it is not differentiable into two species as proposed by de Ferré and Gaussen.

For variations in the genus *Pseudolarix*, a noteworthy case about cone structures has recently been reported. Nielson (1961) described a type of cone from a cultivated tree in Denmark planted in 1890. It bore cones for the first time in 1958 and again in 1960. These cones differ from the cones generally pictured and described in the literature in being smaller and having fewer well-developed scales which are rudimentary towards the end of the axis of the cones. The cone is thus cup-shaped instead of pointed.

From the figures given by Nielson, it can be seen plainly that there are a number of leaves, considered by him rudimentary scales, under each of the cones. These leaves are not ordinarily present in this position. They clearly represent a condition found in occasional proliferous cones appeared in some coniferous genera. In this condition of abnormal cone-proliferation, the bracts become leafy either at both or one end of the cones (Masters 1890). The presence of leaves at the base and the reduction in the number of well-developed scales in the cones of Nielson's tree seem to indicate such a case of malformation, probably due to the local prevailing climatic conditions during the formation of the cones. This condition is not noted in any of the herbarium collections made from the original habitat in China.

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