

## Cyrtanthiflora's Début

Abstract: The ongoing state of uncertainty regarding the nomenclature of hybrids between *Clivia nobilis* and *C. miniata* has failed to offer the grower a stable, correct label for such plants. The early history of these hybrids has been examined and the earliest valid name together with date, author attribution and reference has been located. A narrative account of this search, with ancillary information, has been assembled here, followed by a list indicating the correct nomenclature and valid synonyms; and the consequences of this nomenclatural position have been considered. The concept of a "nothospecies" as it applies to *Clivia ×cyrtanthiflora* is introduced.

The Clivia Fancy of the twenty first century is a new phenomenon, having only really come to the fore during the final decade of the second millennium. Before this, plants of the genus *Clivia* were widely grown, but more as part of a suite of general flowering greenhouse and garden plants. Now the fancy tends to resemble somewhat the heydays of the Dutch Tulip Craze !

Before the commencement of the Clivia Club/Society in 1992 with its Newsletters and Yearbooks, and the appearance of Thurston's *The Clivia* in 1998<sup>16</sup>, Koopowitz's *Clivias* in 2002<sup>1</sup> and a few Japanese and possibly Chinese works, there was no specialist *Clivia* literature - what had been written before was lightly spread through the voluminous and often not readily accessible botanical and horticultural literature of the nineteenth and twentieth centuries.

Notwithstanding, Koopowitz<sup>1</sup> and such authors as John van der Linde<sup>2</sup> and Pierre De Coster<sup>6</sup> have worked towards assembling a comprehensive history of the Clivia. Like all histories, agendas have some influence upon the final result, as does ease of access to a wide array of source material. The Internet in 2011 offers the most incredible access to information through various search engines and such resources as Google Book Search. Learning to ask relevant questions of search engines is really the only major obstacle to spectacular enlightenment. Amidst the numerous facets of *Clivia* that I have interrogated over the last year or so, the history of *Clivia ×cyrtanthiflora* (*C. nobilis* × *C. miniata*) is one that I have found wanting to the point of requiring comment. In this regard, the illustration and description of this hybrid in van Houtte's *Flore des Serres* of 1869-1870<sup>18</sup> (sometimes dated 1877 - which actually refers to the serial number of the plate illustrating this hybrid) is generally offered as the starting point of the history of this taxon. *Clivia ×cyrtanthiflora* does, however, have a history predating this by some ten years, and it is an interesting one. Not wishing to repeat what has been written recently on this subject, I refer the readers to the works of Koopowitz (2002, pp. 32 & 33; 300 *et seq.*)<sup>1</sup> and van der Linde (2003)<sup>2</sup>.

Louis van Houtte, Belgian horticultural impresario extraordinaire, was certainly the originator of this hybrid, the pollination having been performed by Charles Raes, a section head at the firm. Charles Raes was primarily responsible for the gesneriads at the nursery, but later worked with the begonias, successfully raising many new tuberous begonias including *Begonia* 'Charles Raes'. This latter begonia, described as an improved *B. ×sedenii* (*B. boliviensis* × unnamed species - Veitch 1870) was a single-flowered cultivar with deep vermilion flowers introduced in 1873 and was one of the earliest tuberous begonia hybrids - the breeding of this class of plants having only commenced in the late 1860's. It unfortunately did not contribute to further breeding as it was a sterile plant, this probably as a result of it being an unbalanced polyploid.

In 1869-1870, van Houtte recorded with a certain malicious joy that when first seen by a botanist, *Clivia ×cyrtanthiflora* was assumed to be a new species and promptly named and described as such<sup>18</sup>. The literature from around 1859<sup>12</sup> records that it was in fact the famous British botanist and orchid specialist, John Lindley, who was to be lampooned here. The name "*Clivia cyrtanthiflora*" was coined by Lindley, although it was a manuscript name and was never published by him. Even Louis van Houtte admitted that Lindley was the originator of the name; the plate published in *Flore des Serres*<sup>18</sup> is captioned "IMANTOPHYLLUM CYRTANTHIFLORUM Lindl." A number of reports referring to *Clivia ×cyrtanthiflora* (under variant names) dating from early 1859<sup>4, 9, 11, 12, 17</sup>, which will be discussed further on, suggest that the plant first flowered in van Houtte's greenhouses about that date. Lindley apparently saw it first when he was sent a plant in early 1859 for inspection by van Houtte. A search through the Lindley papers, which may reside in the Lindley Library of the R.H.S., could turn up more information on this, perhaps even the original manuscript description.

1859 is a very early date for this hybrid considering the fact that the one parent, *Clivia miniata* had only first been exhibited in 1854; although it had flowered in the two preceding years in the greenhouses of the introducer, Messrs Backhouse of York. Aside from the Backhouse plants, there are no other records of *C. miniata* being exhibited during the balance of that decade, so I can only conclude that van Houtte may have begged pollen from Messrs Backhouse, and he had had the hybrid made on his own plants of the old *C. nobilis*. The early reports of this hybrid are unclear as to whether or not *C. miniata* was used as the pollen parent. Koch and Fintelman state that *C. nobilis* was the pollen parent<sup>7, 11, 12</sup>; van Houtte's note suggests that *C. miniata* was the pollen parent<sup>18</sup>.

"Cyrthanthiflor-" is somewhat of an uncomfortable name. At first glance it appears to be unusable. Since the time of Linnaeus, botanical names containing mixtures of languages have been either much frowned upon or considered to be illegitimate. In this case, the Greek words κυρτος (kyrtos) means "crooked" and ανθος (anthos) means "flower" and the Latin word *flora* means "flower" - hence a "crooked-flowered flower" in mixed languages! But, in fact, once a botanical name has been created, irrespective of its language of origin, it becomes a Latin word. The genus name *Cyrtanthus* is thus a Latin word. Therefore the only meaning of "cyrthanthiflor-" is "*Cyrtanthus*-flowered", and it is a completely legitimate name. Reviewing the spectrum of flower forms that occur within the genus *Cyrtanthus*, it is obvious that Lindley must have had one or other particular species of this genus in mind when he created the epithet "cyrthanthiflora". Although I am unable to track down any definitive information in this regard, it would seem to be likely that he was thinking of *Cyrtanthus obliquus*. An original plate of this latter species is reproduced here.



Plate 1133 from *Curtis's Botanical Magazine* of 1808, painted by Sydenham T. Edwards, illustrating *Cyrtanthus obliquus*. The amazing similarity between the architecture of this umbel and that of the relatively unrelated *Clivia nobilis* is a great example of parallel evolution acting to attract a similar pollinator.

Image courtesy Missouri Botanical Garden. <http://www.botanicus.org>

Regarding the showing of *Clivia* × *cyrtanthiflora*, the first record of this that can be traced is its exhibition at the *Salon d'Hiver* (Winter Exhibition) of 5<sup>th</sup> March 1859 in Ghent (Gand), Belgium. Class 18 - for a "flowering plant, newly raised from seed in Belgium"(tr.) - was won by Louis van Houtte with *Imantophyllum cyrtanthiflorum* (in each case I give the actual name under which the plant was recorded), it garnering a silver medal in addition. No description was offered. The record of this was only published in 1861<sup>17</sup>.

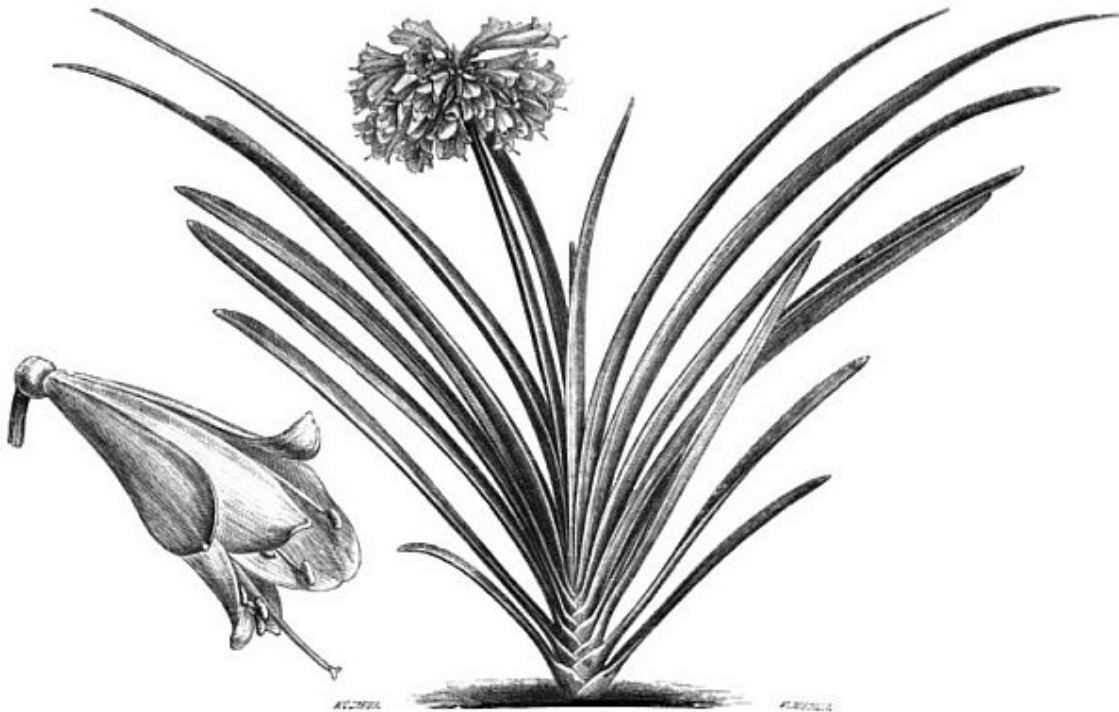
The first mention in print of this new plant is in an advert that was placed for the van Houtte firm in the *Gardeners' Chronicle* of the 12<sup>th</sup> of March 1859<sup>3</sup>, which gives the following entry amongst others as extracts from van Houtte's List No. 76:

*Imantophyllum cyrtanthiflorum* Lindl., first prize at Ghent Exhibition last Saturday (5 March) as the finest of the plants gained this year by seed. --Louis van Houtte has lately sent the plant in flower to Dr. Lindley's inspection. It is a magnificent mule obtained from *Imantophyllum miniatum* and *I. Aitoni* (*Clivia nobilis*), splendid long leaves, large heads of flowers, like those of a large-flowered *Cyrtanthus*, shape of the most beautiful *Blandfordia*, fine colour. Very strong plants at 80s each. Sent out only now for the first time. Will soon appear in van Houttes "Flore".

Fortunately and unfortunately, for various reasons, this does not constitute a valid description as there are no diagnostic characters listed - ie. specific characteristics that are unique, singly or in a combination, to this taxon.

On the 3<sup>rd</sup> April 1859 at the *Ausstellung des Vereines zur Beförderung des Gartenbaues* in Berlin, *Himantophyllum cyrtanthiflorum* was exhibited, this being reported on and the plant being described by Koch & Fintelman in their *Wochenschrift für Gärtnerei und Pflanzenkunde* of the 21<sup>st</sup> April<sup>11</sup>. As far as I can discover, this is the first validly published description of this hybrid. In the following issue of the same journal, a week later<sup>12</sup>, these same authors expanded on the subject, offering a very comprehensive description and discussion encompassing some 965 words.

On the 16<sup>th</sup> May 1859, in the Parisian journal *Revue horticole: journal d'horticulture pratique*<sup>9</sup>, Johannes Groenland described and discussed *Himantophyllum cyrtanthiflorum*, and an illustration of it was published, based on a plant that was flowering in the nursery of M. Rougier-Chauvière, Horticulteur, of the 11<sup>ème</sup> Arrondissement, Paris. This material is often cited as the original description of this hybrid, but as it appeared more than three weeks after that of Koch & Fintelman, this is obviously not the case.



The fine illustration of *Himantophyllum cyrtanthiflorum* drawn by the French botanical artist, Alfred Riocreux (1820-1912), then illustrator for the *Revue horticole*, which accompanied Groenland's description of the plant<sup>9</sup>.

Others consider the van Houtte description of 1869-1870<sup>18</sup> to be the first one published, which is most obviously incorrect.

In November 1859, a long article on *Himantophyllum cyrtanthiflorum* appeared in the *Journal de la Société Impériale et Centrale d'Horticulture*<sup>7</sup>. It was written by Pierre Duchartre, a freelance French botanical researcher, writer and editor, destined to become Professor of Botany at Sorbonne in Paris two years later. This work was based on the plants grown by Rougier-Chauvière.

On the 14<sup>th</sup> June 1860, Messrs E.G. Henderson & Son of Wellington Nursery, St John's Wood, London exhibited a plant labelled *Imatophyllum cyrtanthiflorum* before the Floral Committee of the RHS<sup>4</sup>. In January of that same year, this firm had been offering seed of *Imantophyllum cyrtanthiflorum* (note the different spelling) at 3s 6d/packet in an American gardening journal<sup>5</sup>, having obviously flowered it in 1859. (It is most strange that the price was rendered in sterling in a New York publication).

All of the above references dealt with plants originated from the van Houtte greenhouses. It has been suggested that the actual parentage of *Clivia* × *cyrtanthiflora* could be in doubt, but the work of Ran, Hammett & Murray (2001)<sup>15</sup> has shown that the parentage is as given, namely *C. nobilis* × *C. miniata*. Plastid DNA sequences of *C. ×cyrtanthiflora* and various *Clivia* species (*trnL* and *trnF* with intergenic spacer) from Prof J. Spies and associates recent published on GenBank<sup>8</sup> create phylogenetic trees which demonstrate that the hybrid carries chloroplasts which are in all likelihood those of *C. nobilis*, making this species its mother. Plastids are generally inherited only from the female parent.

Combining the various descriptions accompanying the references listed above<sup>4, 9, 11, 12</sup>, one can arrive at the following as characterising this original cross:

It is in habit very like *Clivia nobilis*. It has leaves, 70cm in length, 3cm wide, lorate (with slightly wavy margins), less fleshy than *C. nobilis* and with prominent transverse nerves. Unlike *C. nobilis*, the leaf margin is not finely toothed. The leaf tip is bluntish, tending towards that of *C. nobilis*. The leaves are arranged in two rows (distichous), up to 7 on each side and cover each other at the bases so that they create a kind of trunk. Being elbowed at the base, they stand somewhat outward.

The double-edged scape is convex on the inner and outer sides, erect, 2.5cm wide at the base, however only reaching the length of 40cm. As in *C. nobilis* the flowers are presented in a down-turned arrangement; compact as a result of their very short pedicels and their considerable number, this being 20 plus flowers.

The flowers have the colour, the size and somewhat the form of those of *C. miniata*, being quite large and bell-shaped, but are however less fully open, about 5cm in length, being drooping, slender and tube-funnel-shaped, over-hanging on short pedicels and up to 2.5cm in width on completely opening.

The colour seems closer to that of *C. nobilis*. At first it is more yellow, but provided with a glimmer of the colour of red lead; however, as the flower unfolds more and enlarges, the latter colouring increases especially on the side facing the light. Only the hooded tips of the flower tepals are green.

The globular ovaries resemble those of *C. nobilis*, those of *C. miniata* being elongated.

As many *Clivia* fanciers have cut their teeth on the nomenclature of cultivated plants while studying orchids, it appears to be generally believed that this latter group of plants would serve as a good model for the naming of the former. Unfortunately the nomenclature of cultivated orchids represents an exception rather than the rule.

In orchids, the nothospecies concept is applied only to natural hybrids, whereas in most other groups of plants, a nothospecies is any hybrid, naturally occurring or an artificial hybrid, at the species level, that is named in terms of the International Code of Botanical Nomenclature (ICBN)<sup>10</sup>. Like all specific epithets, the name of a nothospecies is in lower case and is italicized; but this epithet is preceded by a multiplication sign to indicate its hybrid nature. A multiplication sign is available on the character maps of most widely used computer fonts such as Arial, Verdana and Times New Roman. In cases where a special multiplication sign is not available, eg. on a typewriter, a lower case, unitalicised x may be substituted.

*Clivia* × *cyrtanthiflora* is a nothospecies, and there is a long history of the usage of this name. Its validity may be explored and the consequences of its status as a nothospecies should be considered. To do this, reference needs to be made to the ICBN. The current version in use is the Vienna Code published in 2006<sup>10</sup>.

ICBN 40.1. In order to be validly published, names of hybrids of specific or lower rank with Latin epithets must comply with the same rules as names of non-hybrid taxa of the same rank.

This requires publication in printed matter available to botanists and the general public. It should be accompanied by a description or diagnosis of the taxon. From this, the date of

effective publication and authorship should be determined. The earliest publication of the concept is considered to have priority and this yields the accepted name.

ICBN 33.2. Before 1 January 1953 an indirect reference to a basionym or replaced synonym is sufficient for valid publication of a new combination....

Regarding the hybrid under consideration, it was originally described in a genus (*Himantophyllum*) that is no longer accepted as valid, and thus a new combination was required to place the hybrid into the now-accepted genus *Clivia*.

In the case of *Clivia* × *cyrtanthiflora*, the following relevant nomenclatural list may be assembled:

*Clivia cyrtanthiflora* Lindl. *ms. ca.* 1858-1859, *ined.*<sup>12, 18</sup>

*Himantophyllum* × *cyrtanthiflorum* Lindl. ex K.Koch & Fintelm. *Wochenschr. Gärtnerrei Pflanzenk.* 2: 122-123 (1859)<sup>11</sup>.

Since *Imatophyllum* is simply an orthographic variant of *Himantophyllum*, it is not necessary to characterise the first instance of the former's publication in combination with *cyrtanthiflorum*.

*Clivia* × *cyrtanthiflora* (Lindl. ex K. Koch & Fintelm.) T.Moore in Lindley, J & Moore, T. (eds.) *The Treasury of Botany: A Popular Dictionary of the Vegetable Kingdom.* 1: 300 (1866)<sup>14</sup>.

Moore lists "*C. cyrtanthiflora*" in his list of valid *Clivia* names and mentions the basionym - *Imantophyllum cyrtanthiflorum*. This is chronologically the first instance of the publication of a legitimate combination of *Clivia* with *cyrtanthiflora* that I can find.

*Imantophyllum* × *cyrtanthiflorum* Lindl. ex W.C. Spoor. *Flora en Pomona*, n.r. 1: 69 (1860)<sup>20</sup>.

The name *Imantophyllum* represents a new genus erected by Hooker in 1854<sup>19</sup>, and it is also necessary to list here the first valid combination of the nothospecies epithet *cyrtanthiflorum* with this genus name. Because of the casua interchangeable use of the generic names *Imantophyllum*, *Himantophyllum* and *Imatophyllum*, it is fairly difficult to establish exactly when the valid combination *Imantophyllum* × *cyrtanthiflorum* first arose. As mentioned above, the name first appeared in the *Gardeners' Chronicle* of 1859, but as no useable description was given, this does not constitute a valid publication. In 1860, in the Dutch horticultural periodical *Flora en Pomona*, there appears a reasonably good description of the plant, under the name "*Imantophyllum cyrtanthiflorum*"; sufficient to be accepted as a valid publication of the name. The article is terminated by a perplexing byline "Nieuw Arrond[issemment?] weekbl[ad] voor Haarlem, enz[ovoorts]. 1860, N<sup>o</sup>. 2.". Initially, I thought this may refer to the source of the article; however, I now believe it represents a bibliography, as the nature of the article itself is too technical for publication in any general "weekblad". I am unable to trace any reference to this Haarlem publication itself on the present day Internet. As the article in *Flora en Pomona* is anonymous, it has to be assumed that the chief editor, W.C. Spoor, is its author.

Regarding the name/s applicable to related hybrids and subsequent generations of hybrids, the ICBN<sup>10</sup> has the following to say:

H.4.1. When all the parent taxa can be postulated or are known, a nothotaxon is circumscribed so as to include all individuals (as far as they can be recognized) derived from the crossing of representatives of the stated parent taxa (i.e. not only the F<sub>1</sub> but subsequent filial generations and also back-crosses and combinations of these). There can thus be only one correct name corresponding to a particular hybrid formula; this is the earliest legitimate name in the appropriate rank, and other names to which the same hybrid formula applies are synonyms of it.

The implication of this is that any hybrid containing only the genetic material of *C. nobilis* and *C. miniata*, irrespective of the proportions of the two parents present in the progeny, is named *Clivia* × *cyrtanthiflora*. This is a relatively unsatisfactory state of affairs. *C. miniata* × [*C. miniata* × (*C. nobilis* × *C. miniata*)] and *C. nobilis* × [*C. nobilis* × (*C. nobilis* × *C. miniata*)] will both land up being called *Clivia* × *cyrtanthiflora*, but will barely resemble one another. More information can be attached to a plant by tagging a clonal or cultivar name on behind the nothospecies name; this being used to differentiate exceptional plants. But this still leaves the bulk of the hybrid progeny having a name that is rather devoid of much useful information. The addition of F<sub>1</sub>, F<sub>2</sub>, etc. for straight-up 1<sup>st</sup>, 2<sup>nd</sup>, etc. generation hybrids, and B<sub>m</sub> and B<sub>n</sub> for simple backcrosses to the parental species, covers some of the basic permutations; but where complete records are sought, any breeding that is more complicated requires that the



cross be written out in full, perhaps taking up more space than a reasonable label could provide. Where clones or cultivars are registered, the full breeding of a plant would be recorded by the Registrar.

Whereas the use of grex names as suggested by Koopowitz (1998)<sup>13</sup> is disallowed, "(Minicyrt Group)" (Koopowitz 2002)<sup>1</sup> and similar epithets for each of the different hybrid formulas may be created and combined with the name *Clivia* × *cyrtanthiflora* to create further clarity.

I hope that this note does not discourage anyone from pursuing the wonderful potential in terms of colour, form and the carriage of flowers inherent in the advanced breeding of *Clivia* × *cyrtanthiflora*. That would really be a disaster.

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#### **Required reading:**

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© 2011 Greig Russell  
"Valhalla", Osborne Lane,  
Kommetjie,  
7975 Western Cape,  
Republic of South Africa.  
[grussell@telkomsa.net](mailto:grussell@telkomsa.net)