

John White's BLITZ LATIN automatic translator.

The Botanical Latin Add-on ('BLA')

A. Introduction.

Botanical descriptions have been recorded in Latin from Roman times, but the first detailed descriptions of plants and their differences did not emerge until the advent of the microscope. It was the influential Swedish botanist Carl Linnaeus (1707-1778), often described as 'the founder of modern botanical nomenclature', who created the first systematic classification of plants, and he chose Latin - the international language of his day - in which to record his thoughts and observations. The use of Latin as the international language for botany remains still, and solves the otherwise difficult problem of how to provide acceptable international descriptions for widespread plants that may have many different local names.

The modern use of botanical Latin has created a language that would baffle the ancient speakers of the classical language. Its sentence structure resembles far more closely that of modern English than of the Latin of Cicero (or of Pliny, one of the earliest recorded botanists), while numerous ancient words have had their meanings or syntax altered to suit botanical practice. However, the rule is that new Latin words should wherever possible be derived from earlier existing Latin words. Botanical Latin is certainly a dog-Latin, but still a living Latin, which has imported many descriptive Latinized terms from ancient Greek, and permits Arabic numerals in order to improve readability. For example, the term "7.5 mm" is acceptable, since there is no classical precedent for "VII.V" and millimetres were unknown to the Romans.

Botanical Latin is thus a modern form of Latin, of uncertain pronunciation, which any botanist or keen amateur gardener must have the ability to translate. New rules, introduced by the 'International Botanical Congress' at Melbourne in 2011 permitted future botanical descriptions to be made in English, as well as Latin, from January 2012, but there remains a large body of Latin work already published on Botany that will require translation.

This may be a good point at which to remind again users of Blitz Latin that Latin is one of the most ambiguous languages ever invented. It makes machine translation exceptionally difficult, see 'Ambiguity' in the main manual for Blitz Latin.

B. William T. Stearn (1911 - 2001) and 'Botanical Latin'.

Professor Stearn was both an esteemed botanist, who wrote many books on the subject, and also an expert Latin scholar. His masterpiece 'Botanical Latin', first published in 1966, is widely recognised as *the* encyclopaedia, or bible, of modern botany. It encompasses an historical introduction to modern botany, the grammatical use of Latin generally, the specific use of Latin for botany, and many chapters devoted to botanical elements, with their Latin names, precise written descriptions and frequently a diagram of that which is intended.

The importance of this book to any newcomer to botanical Latin can scarcely be exaggerated. The 'translation' from the Latin 'pedunculus' to the English 'peduncle' is valueless, unless the

reader knows what a peduncle is - and the written explanation may need to be supplemented with a diagram.

Therefore, in order to derive benefit from the Botanical Latin Add-on to Blitz Latin, it is essential that the user has:

either an existing knowledge of botanical terms;
or access to William Stearn's 'Botanical Latin' book.

The paperback edition of the book, which runs to no fewer than 546 pages, can be acquired for less than £20 in the UK.

This writer, the programmer of Blitz Latin, has spent about three months engaged in the study of Stearn's book for its Latin use and vocabulary.

C. The 'BLA' with Blitz Latin.

To the best of our knowledge, no machine translator from Latin to English has ever been created for botanical Latin, in the sense of providing formal translated sentences. There are several amateur electronic dictionaries that provide individual meanings for Latin botanical words, but most are distinguished by a poor understanding of Latin grammar and a failure to proof-read their output. In sharp contradistinction, the 'Translat' electronic dictionary for botanical Latin, written by the Australian Peter Bostock, who is an eminent botanist much influenced by Stearn, is very well crafted, and has provided a very useful cross-check on Stearn's vocabulary (see below).

Blitz Latin has acquired the reputation for being the finest available machine translator of Latin into English. A long list of prestigious institutions that make use of Blitz Latin can be found on the website of the independent distributors (Software Partners), at www.blitzlatin.com. Its high-speed translation algorithms appeared to be eminently suitable for the task of translating botanical Latin, but first it was necessary to acquire a suitable vocabulary.

Botanical Latin words were therefore gleaned from a variety of sources, including Stearn's giant vocabulary (naturally), Bostock's Translat program, and a variety of other sources, including books and manuals published by the Royal Horticultural Society (RHS), Kew Gardens (London) and even the catalogues of commercial plant-growers. In addition, Blitz Latin has the ability to compile lists of words that it does not understand when translating authentic botanical Latin texts. These words could be collated and verified in Stearn or Bostock or, where the intention was obvious, by this writer. Then all the words could be converted into the Blitz Latin electronic format, assigned suitably compact meanings, and finally incorporated into Blitz Latin itself, and its Botanical Add-on.

D. Dog-Latin and an electronic dictionary.

The vernacular nature of botanical Latin, much of which has been written by those who doubtless have great talent in botany, but less talent for Latin, has ensured that many botanical Latin texts contain poor grammar and/or misspellings of Latin words.

The purpose of a dictionary is to enforce standards of spelling*, and therefore we do not feel it

*The editors of modern paper dictionaries would have us believe that the incorporation of controversial (and therefore publicity-worthy) new words into their new editions reflects only the current common usage of words. Really? So why are

necessary to add every misspelling of a Latin word to our electronic dictionary. However, the user should be aware of the problems of defective grammar and spelling. Poor spelling can often be corrected by consulting the 'Dictionary' function of Blitz Latin (menu item 'Dictionary/Edit Dictionary'). Just type in the first few letters of the doubtful word, and the nearest matches of the stems will be shown in a small dialogue box.

Grammatical errors cannot be so easily remedied, and may result in bizarre mistranslations. Remember: Blitz Latin has an excellent understanding of Latin grammar, probably better than that of the original writer of botanical Latin, but the machine translator lacks human knowledge, judgement, comprehension and common-sense.

The electronic dictionary of Blitz Latin has always tried to provide detailed meanings of individual Latin words in order to make comprehension easier - as stated earlier, a translation of 'pedunculus' as 'peduncle' is not terribly helpful. However, there is simply not enough space allocated within the electronic dictionary to provide the more detailed explanations required by botanical Latin.

The number of Latin words in the Botanical Latin Add-on dictionary is currently 4,411. These are words as they would be counted in a paper dictionary, and ignore the very large number of words that can be derived from the basic word with inflections, prefixes and suffices. This extra dictionary does not include words found in ordinary Latin, which are held already in the main electronic dictionary of Blitz Latin.

Blitz Latin has a subsidiary file, named "UserFile.txt". Users can add to this simple text file any Latin words omitted from the dictionary, although it is of course necessary to ensure that you know the correct grammatical structure and meaning. Numerous worked examples are already provided with this file. If you choose this option, first make sure that the word missing from the electronic dictionary of Blitz Latin has not itself been misspelled by the original author.

E. The Comma in Botanical Latin.

Mention has already been made of the English-like sentence construction of much modern botanical Latin. This has extended to the unfortunate over-use of commas to separate adjectives in sentences, and it causes a most serious effect on machine translation.

The comma was unknown to the ancient Romans, and was introduced in medieval times as a convenient method to divide lengthy Latin sentences into clauses. The comma makes each clause easier to read, especially in Latin where the subject verb and object may be placed anywhere in the sentence, in any order. 'We love the king, who loves the queen.' The comma divides the sentence into two convenient clauses.

However, in English it is customary to separate adjectives with commas: 'We love the tall, handsome king, who loves the small, beautiful queen.' In English, which is not an inflected language, the gratuitous introduction of the extra commas has no effect on the meaning.

the words 'receive' and 'separate' not found in English dictionaries as 'recieve' and 'seperate', which is the way that most children and half of adults (mis-)spell these words?

For Latin, which is an inflected language, where the ending of the adjective is intended to tell the reader to which noun the adjective relates, such use of commas is very dangerous to the translation. Adjectives are matched to their qualifying nouns for gender, case and plurality. If we introduce commas between adjectives, it becomes unclear which noun the adjective qualifies. In the sentence above: ‘We love the tall, handsome king...’, the first clause has become ‘We love the tall’, which makes no grammatical sense.

Let us consider an example from real-life botanical Latin: *frons est tenuis, alta* (‘the frond is thin, tall’). If the comma divides clauses, then *alta* appears to be an adjective unqualified by any noun (actually, it is intended to match the noun *frons*). Therefore the machine translator looks for an alternative to the adjectival meaning of *alta*. Can it find one? It can! *Alta* can also be construed as a plural noun, with meaning ‘the deeps’. Thus the botanical sentence above will be translated as ‘the frond is thin, the deeps.’, a translation which is grammatically excellent, but is surely not what was intended by the original author. To emphasise the ambiguity of Latin, *alta* can also be the participle of the verb *alare*, and thus can mean ‘fed’. *frons est alta*: ‘the frond has been fed’.

Thus we have a new rule for the translation of botanical Latin, which has been inflicted upon us by the limitations of computer understanding:

ALL COMMAS MUST BE REMOVED FROM A BOTANICAL LATIN TEXT BEFORE MACHINE TRANSLATION!

(Those with a good knowledge of Latin can permit commas to remain where they separate clauses and not adjectives. This will even improve the final translation.)

F. Installation and De-installation of the ‘BLA’.

The Botanical Latin Add-on for Blitz Latin is supplied only to those who have paid the extra fee for its use. The Add-on is provided as a single data file ‘BotanyTransl.dat’, which contains all the translations for botanical Latin words. The Latin stems are already incorporated into the main Blitz Latin electronic dictionary in order to make use of Blitz Latin’s very high speed search algorithms, but the meanings of the stems have been set to null (actually, to a string of hyphens).

The presence of the BlitzTransl.dat file will be recognised automatically by Blitz Latin, which will cause the following changes to the translator program:

1. The preferred ‘area’ will be set to ‘Horticultural’.
2. The preferred ‘age’ will be set to ‘Latin from all ages’.
3. The preferred ‘word-order’ will be set to ‘Nom-Verb’ (medieval word ordering).

The user will be asked to confirm that the presence of the BLA is required for this translation session.

You can switch off Botanical Latin at any time during your current translation session simply by setting the user-selected ‘Age’ (menu item ‘Edit/Age Preferred’) to Classical or Medieval Latin. Subsequently you can, if you wish, set the ‘Age’ to ‘Latin from all ages’ without reinstating the Botany translations. It will be necessary to exit, and then reload, Blitz Latin, in order to reintroduce the BLA dictionary.

Incorporation of the BLA will have some impact on both the speed and quality of translation of classical or medieval Latin. If you wish to disable the BLA for a longer period, then there are two

easy solutions:

Either: rename the file BotanyTransl.dat to BotanyTransl.dit;

Or: move the BotanyTransl.dat file into another folder.

The BLA file will be supplied in compact form, as a self-extracting file BotanyLatinAddon.exe. Double-click on this file in order to extract the BotanyTransl.dat file, then move it to the main folder of Blitz Latin. By default, this folder will be in c:\program files\blitzlatin, but you may have elected to install Blitz Latin elsewhere during the set-up procedure.

Users of BLA will certainly have the meddict.dat file (medieval dictionary) supplied to all registered users of Blitz Latin, and therefore the BotanyTransl.dat file should be placed in the same folder as the meddict.dat file.

When you load Blitz Latin into memory, you will receive a new message 'Opening botany database for reading...done'. If it does not appear, then you have placed file BotanyTransl.dat in the wrong folder.

G. Use of the 'BLA'.

1. Prepare your Latin file.

It is likely that you will wish to translate an existing text of botanical Latin. It is essential to prepare your file properly for translation, as listed below:

- i) Convert your text to a text file (eg myfile.txt). You may have computer-scanned the original text with Optical Character Recognition (OCR), using one of the many commercial packages available for this purpose. (If so, be sure to proof-read the finished text thoroughly.) Or you may have downloaded the botanical text from the Internet. If so, use your web-browser or a word-processor program to save the file as a standard text (.txt) file. Or you may have typed in the Latin yourself, copying from some other source. Whatever the origin, the final file of your Latin must be a simple text file with the '.txt' extension.
- ii) Load your text file into a word-processor, and make the following changes, using the 'Search-and-Replace' option:
 - a) Replace all commas with NULL (ie, no text in the replacement box). This is *essential*, see section (E) in this manual. If you have sufficient knowledge of Latin, you may re-instate (or not remove) those commas that separate clauses only.
 - b) Eliminate all hyphens that join two words, eg from mono-carpus to give monocarpus.
 - c) If there are any obvious abbreviations in the text (usually characterised by one or more consonant letters, but no vowels, and terminating in a full-stop ('.', period), then expand them to their full meaning. A list of common abbreviations can be found in Stearn's encyclopaedia, described in section (B) above, chapter 24. If you are not sure of the meaning of an abbreviation, then delete the terminal '.'. Otherwise, an end-of-sentence will be assumed falsely.
 - d) Units of measurement should always be separated from their Arabic numerals; for example, change "7.5mm" to "7.5 mm" (note the extra space).
 - e) Finally, save your edited text file, perhaps as 'myfile_edited.txt'.

2. Translate the edited file with Blitz Latin.

- i) Run Blitz Latin by double-clicking on its icon, and accept the defaults for botanical Latin

(‘area’ = Horticultural; ‘age’ = All Ages; ‘word-order’ = Nom-Verb.

ii) Select the translation option ‘Edit/Translate’, or press CTRL-T.

iii) Open your file ‘myfile_edited.txt’ from the menu item ‘File/Open’, which will cause automatic translation.

Use of these and other options is explained with more detail in the main manual for Blitz Latin - be sure to read the first section of the manual, even if no other part. Section ‘1. The Basics’ contains the basic operating instructions for Blitz Latin, with a worked example.

H. Standard of Translations.

Generally speaking, the quality of translations from Latin by Blitz Latin-BLA should equal that of classical Latin in standard Blitz Latin.

The problem of ambiguity remains, but Blitz Latin will always provide a translation that is grammatically correct, even if has not selected the correct words from several ambiguous matches that a real Latin expert would have preferred. For this reason, Blitz Latin has an editing mode, so that you, dear reader, with your superior intelligence and general knowledge, can make final changes to the machine translation.

I. Example Latin Texts.

We have provided a Latin text file ‘StearnLatinTexts_Edited.txt’ with the BLA package. It contains a small number of short extracts taken from Stearn’s ‘Botanical Latin’ book, and edited to be immediately acceptable to Blitz Latin. We advise using this file to become accustomed to the quality of translation from Blitz Latin, and its strengths and weaknesses in translation. You should find that these examples are quite easy to understand after translation.