

## MONTHLY COLUMN FOR SOAP, PERFUMERY & COSMETICS

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### **A New Year with new beginnings**

My column this month was inspired by a clip sent to me by Nick Lawson from *the Independent*, which was published on 23<sup>rd</sup> November last year.

The new year starts with the promise of change in the botanical world, since it appears that my hero Carl von Linné and subsequent 19<sup>th</sup> century botanists (such as Decandolle and Jussieu) made some huge errors in their classification of the families to which plants belong. It was not their fault, because they were unable to study the DNA structure of the botanical material they were examining. This is not a reason for us to panic! It will not affect the genus and species names, only the families in which those plants are grouped.

The molecular biologists at the Royal Botanic Gardens of Kew in association with the University of Uppsala, Sweden and Harvard University have turned the natural world on its head.

Who would have thought that the pollution resistant plane tree (*Platanus hybrida*) so common in the squares of old smog-ridden London, would be the closest relative of the sacred Lotus Lily (*Nelumbium nucifera*)? The Sacred Lotus had previously been ascribed to the family of waterlilies (Nymphaeaceae), because it closely resembled them.

Roses (*Rosa* spp.), which were previously thought to be related to the saxifrages or the bean family, now turn out to be related to the nettles, figs and buckthorns. The paw paw (*Carica papaya*), which was thought to be a member of the same family as the passion fruit (*Passiflora edulis*) now turns out to be related to the cabbage (*Brassica oleracea*). The beautiful orchids, which you could be forgiven for thinking belonged to the lily family (Liliaceae) turn out to be related to the yellow star-grasses.

The whole of this block-busting news should have filled me with gladness, since innovative science is always exciting and so this should have been a time of great celebration.

Charles Darwin had produced a wonderful theory for evolution, which made absolutely perfect sense. The old botanists had a system of classification of the plants, which though cumbersome and subject to frequent and heated arguments, also made perfect sense. Both of these facts gave a feeling of comfort and security.

In the past, as today, great advances in horticulture have been achieved by the use of selective breeding. This technique gives evolution a helping hand, by selecting those plants which have a better colour, greater drought resistance, higher oil content, greater chemical composition etc., i.e. one selectively grows and hybridises successive generations to naturally achieve a goal. It is a long and slow process.

A classic example would be the selective breeding of Beetroot and Sugar Beet, both of which started off as the Sea Beet (*Beta maritima*). One was selectively bred for its colour and the other for its sweetness. They are still in the same family and they still have the same genetic make up. Every year the amount of sugar is being progressively increased in the sugar beet by selectively taking the seeds of higher sugar yielding crops.

However, there was this niggling, nagging and uncomfortable sensation (not dissimilar to having had that extra slice of Christmas pudding after a second helping of turkey), which would not go away. At first, I thought that it might be because my knowledge of genetics could be written on the back of a cigarette packet, and ignorance meant that I would have to take all the new findings on trust. It was only when I reread (quite by chance) a lecture given by my respected colleague Paul Rutherford, that my disquiet was explained.

We are currently in the midst of a great debate relating to genetic engineering, and already our own industry has featured some excellent papers on the subject in various conferences. The examples quoted are usually related to soya (*Glycine max*) and tomato (*Lycopersicon esculentum*), but who knows what other travesties of Nature are in the pipeline.

In the case of soya, the genetic scientists have implanted genetic code from another plant species, by inserting part of the DNA sequence from Brazil nut (*Bertholettia excelsa*). The argument that they have not altered the plant in any way, because it still looks like soya, grows like soya (but better) and tastes like soya must surely be invalidated by this latest news from Kew. If the DNA sequence has been tampered with, then to what family does this new strain of soya belong?

You might say that this is nothing to do with our industry and I am afraid you would be wrong. It has everything to do with our industry, since soya oil provides one of the important feedstock for the production of many of our raw materials. Maybe you (like me) suffer a conflict between the relevance of the final product chemistry and that of the genetics involved.

If the genetic engineers have their way, they could destroy the whole of our botanical genetic history in an infinitesimal space of evolutionary time. Cross-pollination by the new Frankenstein-like soya will infect the crop growing in the field next door, that has evolved according to the tried and tested laws of Nature. I call that pollution, and now I know the reason for my discomfort, because it is a pollution that cannot be controlled once it has started.

The full text of the new botanical family classifications will be published very shortly, and for some inexplicable reason it fills me with sadness. As I wait for my Peony to come into bloom, it will be in the knowledge that it is not related to the buttercup (which it closely resembles structurally) of the Ranunculaceae family, but to the seemingly unrelated Saxifrage.