

# Naming names in botany

Clive A. Stace

THOSE who have been frustrated by a change in the Latin name of an organism can take heart from events at a recent meeting\* — determined efforts are in hand to solve the problem, despite ample evidence that there are still wide differences of opinion on the best way to achieve it.

There was, however, no disagreement that names are important: "the name of a plant is the key to its literature" is as apposite today as when Van Steenis proclaimed it in 1957. If one uses the wrong name, or if different names are in use at once, confusion is the result. For example, *Lycopersicon esculentum*, *L. lycopersicum* and *Solanum lycopersicum* are all names used for the tomato. Although employed for a short period recently, the second is a nomenclatural synonym of the first and should not be used, but the first and third are equally correct names according to the genus into which the tomato is placed.

The subject matter of the meeting was very much plant (and fungal) names, and the few contributions by zoologists and bacteriologists added little to the proceedings. Animal and microbial nomenclatural problems are broadly the same as plant ones, but the backgrounds, and so the solutions, differ in detail. More bizarre suggestions that numbers should be used instead of names, or Esperanto instead of Latin, are unlikely to be followed up.

A careful distinction has to be drawn between nomenclatural and taxonomic name changes. Nomenclatural name changes are the result of application of the *International Code of Botanical Nomenclature*, especially the rules of priority; provided the *Code* has been interpreted properly nomenclatural changes are mandatory. Taxonomic changes occur as a result of new research, or new assessments of data, and are often open to more than one interpretation. They are therefore always to a certain degree subjective and often the evidence for them is equivocal. Nonetheless there was general agreement at the meeting that it would be foolish to legislate against taxonomic changes. To do so would ossify taxonomic data and make further research almost pointless — it would make as much sense as deeming a particular metabolic pathway, or a certain DNA sequence, correct in detail, even after further study had shown that it was not. The best way to prevent the ambiguity caused to users by taxonomic name changes would be for specialist user groups (horticulturists, timber technologists, weed researchers, conservation legislators and so on) to issue check-lists of standard names of their relevant species. Such a list could last for an agreed number of years until it was rendered too outdated by

the changes that had accumulated; a new list could then be drawn up.

But what of ways of combating unnecessary nomenclatural name changes, which may be the result of meticulous rummaging through the old, neglected literature, or indeed reversion to a formerly used name, which, after all, is again deemed correct? Two schools emerged. First, the radicals (such as R. K. Brummitt, Kew; C. R. Gunn and J. H. Wiersma, US Department of Agriculture; W. Greuter, Botanical Garden and Museum Berlin; V. H. Heywood, International Union for the Conservation of Nature; and myself) who would opt for a list of accepted or protected names that could not be predated, nor whose spelling or gender could be changed by bibliographic delving. Second the reactionaries (exemplified by W. R. Anderson, Univ. Michigan; A. Cronquist, New York Botanical Garden; F. R. Fosberg, Smithsonian; and D. J. Mabberley, Univ. Oxford), who felt that the problems are exaggerated and are best dealt with by rigorous application of the *Code*.

There seemed to be a clear majority who were not persuaded by this second view — promises for over half a century that close adherence to the *Code* would bring stability have not been fulfilled, and changes to the *Code* (described by several speakers as ill-conceived meddling) designed to remove anomalies have often caused yet more instability. But had the meeting taken place on the other side of the Atlantic, the majority might well have supported the opposite opinion.

The main meeting was followed by closed sessions of specialist committees, whose task is to hammer out proposals to be put to the nomenclatural sessions of the next International Botanical Congress (Tokyo, 1993). Whatever the difficulties caused by nomenclatural instability, and whatever the prevailing view among the global taxonomic community, proposals to adopt lists of protected names will have to be passed by voting at Tokyo. There is at least an even chance that they will not.

Meanwhile, as reported last year (*Nature* 348, 275; 1990), another, larger group of taxonomists is about to launch an attempt to produce a world check-list of higher plant species in five–six years. This scheme goes under the provisional title of the Species Plantarum Project. If it is successful I believe that the pressure to adopt it as a list of protected names will become irresistible, and that this route offers the best hope for greater stability of plant names — and of giving taxonomists a better name among their fellow biologists. □

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# Signs of stress

STRESS is the great curse of modern life. It is regularly blamed for migraine, professional burn-out, depression, premature ageing, and much else besides. Daedalus now intends to pin down and quantify this vague but almost universal malady.

In conventional engineering stress-analysis, a transparent model of a structure or component is put under load. At each point in the model, the local stress-induced anisotropy rotates the plane of polarization of the light traversing it. Viewed through a polarizer, the model shows its stress distribution as a beautiful fringe pattern.

Mental stress, says Daedalus, also leaves its physical mark on the sufferer's body. Habitually hunched shoulders, knotted stomach, clenched fists, high blood-pressure and so on, are obvious examples. Milder chronic stress may simply tense up a few specific internal muscles somewhat beyond their normal 'tone'. Human beings are practically opaque to polarized light. But they are transparent to polarized ultrasound, which can also travel through solids and be plane-rotated by stress-anisotropy.

So Daedalus's ultrasonic body-stress mapper places a transversely polarized ultrasonic source on the patient's chest, say, and examines the resulting ultrasonic shadow-graph on his back. To 'develop' the pattern, Daedalus has a special liquid-crystal 'stress-varnish'. Nematic liquid crystals align themselves with the microscopic 'grain' of a surface, and if painted on the skin should sensitively reveal the direction of vibration at each point. Through polarized sunglasses the watching psychiatrist will see the internal web of muscles and tendons outlined on the patient's back, darkening or lightening as they tighten or relax.

Experience will be needed to interpret such maps. Bottlers-up of suppressed rage, or fear, or guilt, or anxiety, or despair, or hopeless longing, will all show characteristic internal stress-maps, obvious once they have been identified. Facial stresses, revealed by an ultrasonic exciter on the back of the head, will be particularly revealing. DREADCO's liquid-crystal cosmetics will display the true tensions behind the fixed careless smiles or carefully neutral expressions so many of us maintain.

Even better, these stress-maps will change or intensify under verbal probing. The psychiatrist will rapidly home in on the source of all the trouble. He will even be able to tell when his wise counsels or deep insights are having some affect. But probably the best cure for stress would be to let the patient see his own stress-map in a mirror. He could then discover what thoughts or situations wind him up, and learn to counter them by active or meditative bio-feedback.

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\* *Improving the Stability of Names: Needs and Options* Royal Botanic Gardens, Kew, UK, 20–22 February 1991.