IX. ACCURACY AND COMMON SENSE IN PLANT DESCRIPTIONS

In papers and manuscripts on tropical phytography I find a growing tendency to "overdo accuracy", with the negative effect that accuracy is underdone. Tropical phytography operates, of necessity, at a different level of accuracy in details than does temperate botany, because the aim is wider and the materials and field knowledge scantier. But as often has been demonstrated, if the second and third storey are begun before the first storey has been completed, such a wing of the house of science is unfit for inhabitation. I see it therefore as the present task of the tropical botanist to finish the first storey of knowledge, and of accuracy, for all groups. With this in mind, some thought should be given to the following considerations.

In the first place there is again a growing custom with several to incorporate so much (often unnecessary or unwanted) detail in descriptions to obscure the important and really distinctive characters. Everybody can understand that, whereas a herbarium botanist may often be very glad to have 30 specimens collected during 150 years, which is a fraction of a fraction of the millions of specimens of the sum of the populations growing in nature during that period, it is a vainless attempt to encompass on the basis of three dozen specimens the complete polymorphism in great detail. If one wants to make such elaborate descriptions, one should split them into a diagnostic description followed by additional measurements and characters of secondary value. This is a compulsory courtesy against those who will consult such elaborate descriptions. With more collections coming in it is clear that there will be always minor deviations from the additional descriptive part, but more rarely in the diagnostic part; in the latter case one is becoming alert.

In the second place I have found to my surprise that a few botanists mix up characters and measurements derived from dried with those from living specimens. This is a priori wrong, because one can observe living characters only from a small or even very small portion of the available material or derive them second-hand from collectors' notes. It is curious that the caution towards "completeness" works here actually against accuracy.

Of course I do realize that certain characters from living specimens are generally mentioned in descriptions, for example the colour of petals and fruits, seeds, and, extremely important but always forgotten: the state of ripeness of the fruit, which cannot be seen in the herbarium!

Further there is nowadays a growing and laudable tendency to enable monographers to work in the field on their own group. This results into the blessing of more ample field

notes! However, I must warn the herbarium botanist that the importance of such field notes of new specimens should not be overrated. The unfortunate fact remains that at least in the majority of the herbarium materials of Malesia comparable field notes are absent on almost all other specimens.

This holds still more when field collectors bring home living material, another blessing. This is often only one plant, at most a few specimens, but mostly from a very restricted area. Such material is often very intensely studied in detail in the greenhouse, but it is sometimes insufficiently realized that it can furnish only a very limited view of the variability of the species population one is revising. Details of such living material are of course extremely welcome, but their importance must not be overrated; they are seldom decisive and valid for the entire population.

The same holds for ecological observations of field collectors. Such notes are mostly absent from earlier material, but are sometimes noted in great detail on new material of accurate enthusiastic field collectors. Nevertheless, one extensively annotated collection may throw light on the structure and/or biology of a whole taxon. But because of the fragmentary and therefore incomparable data, collector and number should always be cited in conjunction with the notes. Such detailed notes should, however, be handled with great care, as they provide information from only one or a few localities; they may be more or less representative, but they may also give only a small part of the truth, and thus appear fallacious, or at least inaccurate as a generality. If one has 15 sheets of a tree and once noted that it grows on "loamy soil" (whatever this is) the acception of this single positive soil indication as 'the' soil type preferred by the species is definitely not permissable. As with the "living" characters of floral and other details there is no sufficient scientific basis for the constancy of ecological "characters".

This is still more important for the measurements taken from living material, which should never be "mixed up" with those derived from the herbarium sheets. Thick fleshy leaves may become papery or even thin in the herbarium without possibility to "swelling" them to "living" size by boiling or use of chemicals. Flowers and many other parts shrink in the herbarium - and that sometimes disproportionally! - with (15-)20-30(-40) %. Discrepancy of measurements cause not seldom uncertainty in identification of living specimens with floras based on dried material.

In making a local Flora the resident botanist may, by great and prolonged field experience, compose his Flora only on living material, with measurements taken only from living specimens. But in general this is in the tropics an impossibility. Measurements should consistently be derived from dried material only!

A good joke, which I know firsthand, was that of a visitor of the Treub Laboratory, in fact my teacher Prof. Went, coming with a living plant to Dr Valeton for having its name, upon which Valeton, glancing at the plant, answered that he did not know it, but that Dr Koorders with his expert field knowledge would certainly be capable of providing the information. The latter was working next to him on the same bench and told Dr Went that it so happened that the plant in question belonged incidentally to the genus of Rubiaceae which Dr Valeton was working up at that moment from dried material!

It is, in fact, not seldom ridiculed if a botanist prefers to have a plant dried in the herbarium before identifying it.

I myself must admit that during exploration in Malesia I have not very rarely failed to recognize the generic disposition of a plant in the relative haste one always has in the field, though later I could name it at once after the material was dried. Dried specimens have a certain characteristic "habit" to which we are more accustomed than to that in their living state. Though I am not siding up with the pure herbarium botanist, I must admit that, for swift pre-identification, herbarium material shows many decisive characters more clearly than living material, by the greater contrast such characters assume in drying; for example, pellucid glands and crystals, cystoliths, indument, colleters, bark and wood-anatomy, venation, discoloration of leaves, etc.

Summarizing the second point, I feel that if one wants to evaluate field notes one should be extremely careful in generalizing, and preferably separate field characters or measurements taken from living plants from those of the dried specimens. The dried characters can be verified on the bulk of the material and are conformable, can be compared; detailed field characters are in tropical Floras only incidentally provided at least for the present. This may change in the far future, but that will look after itself.

Thirdly, there is a growing tendency, especially among young botanists, that more "accuracy" can be attained by using steadily more expensive and complicated binoculars and the use of very high magnifications as compared with those used hitherto and of course fully incomparable with the single lenses used by the Makers of Botany. Though I personnally prefer, from a sort of laziness, a normal binocular to the single lens used by our illustrious predecessors, I stick to the low power magnification. With high magnification one is getting out of proportion with former observations and descriptions. Glabrous leaves may become 'hairy' if one accepts highly magnified papillae essentially as representing hairs, etc. For normal herbarium work low power magnification is desirable to compare characters by the written record of our predecessors. For the rest, if one cannot distinguish supposed species by means of a low-power lens, my conviction

is that they are no good. It is fallacious thinking that any technique could replace even part of observation and deduction.

No systematist of the Spermatophytes needs to get an inferiority of being deemed to "get behind the time" from using merely a low lens for the purpose of normal revisional work, as less as we need have fear of brainwork replaced by computers. For Cryptogams the situation is of course very different.

C.G.G.J.van Steenis.

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"People who are little interested in evolution, and others who are deeply interested, both make what they call 'Natural groups' that is compact and coherent groups, but those interested in evolution let their minds run on the question how the group arose and changed and even on selective forces directing the change. They build something which is pure hypothesis and which they may indeed put forward as pure hypothesis but it is very hard for a man to build something with sincere labour without believing in it; and if presently the hypothesis has qualities like symmetry, one feels it beautiful and isn't beauty truth?"

"Let us follow this line of thought and consider what our taxonomist will do with such a perverse phylogenetic tree. Will he put things that are clearly very like together, or will he put things which are really near blood-relations but far apart in visible features put together? Does he say - to hell with phylogeny, my job as a taxonomist is to make a classification that a schoolchild can use? - I doubt it."

"Why do people split genera? I take it largely in relation to the ideal of the Natural genus, and say what anyone will it is more fun to make a new genus than not to do so. The genus of the Crucifers which has suffered worst is Brassica which has become half a dozen, in fact this one accounts for a good deal of the total increase, but I note that these remain next one to another and in any case most of them correspond to sections recognized by authors who lumped the lot. Thus the change is smaller than it might seem: it is just a different answer to the question, is a certain real and acknowledged difference to be rated at generic value?"

"My final plea is to the taxonomist: while he must work with sincerity and for his own satisfaction and the edification of other taxonomists let him remember that his taxa are the ordinary man's currency and very likely his heavy burden. It is hard for the expert to see the difficulties of the uninformed, but it <u>is</u> possible. Let him therefore try to do so and lessen his difficulties. This is courtesy. In taxonomy, as in other things, there should be courtesy."

Professor T.M.Harris, The Inflation of Taxonomy. Presidential Address (Proc.Linn.Soc.Lond. 175, 1964, 1-7).