

Discussion générale = general discussion

Objektyp: **Group**

Zeitschrift: **Boissiera : mémoires de botanique systématique**

Band (Jahr): **14 (1968)**

PDF erstellt am: **05.08.2024**

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DISCUSSION GÉNÉRALE – GENERAL DISCUSSION

Correvon:

J'ai un jardin botanique privé. Le plus grand souci pour moi est la détermination des plantes. J'aimerais qu'une plus grande collaboration soit établie entre les jardins botaniques pour une nomenclature correcte. Je pense qu'il serait très utile d'avoir un système de petites fiches au moyen desquelles les jardins pourraient s'aviser entre eux en cas de constatation d'erreurs.

Les sources d'erreurs, dans un jardin botanique, sont multiples et parfois insoupçonnées. Il peut arriver, par exemple, que les étudiants déplacent ou intervertissent les plaques avec les noms des plantes. Dans le Jardin botanique de Genève, mes camarades de collège se faisaient un malin plaisir de changer les étiquettes ! Or un jardinier qui doit récolter les graines, si ce n'est pas le jardinier-chef même, se laissera prendre.

D'autre part, les différentes communications présentées à l'occasion de ce symposium ont convaincu chacun, dans chaque domaine, de l'indiscutable nécessité du développement de jardins botaniques toujours plus grands et plus nombreux. Le développement de ces jardins se heurte toujours à la disponibilité des crédits accordés par les autorités. Est-il, par exemple, plus judicieux d'accorder des crédits à un théâtre ou à un jardin botanique ?

Les responsables de ces institutions doivent avoir en main des arguments de propagande susceptibles non seulement de frapper les dirigeants, mais également l'opinion publique, car c'est souvent d'elle que résulte la réalisation de grandes choses. Une réticence manifestée par la masse des citoyens, et reflétée par la presse, peut être un barrage complet aux projets élaborés; le soutien du public, par contre, est souvent la meilleure garantie de réalisation.

Le jardin botanique ne peut être exclusivement réservé aux scientifiques. Il faut que le public soit atteint, soit par des présentations spectaculaires, soit par une vulgarisation lui permettant d'avoir au moins une petite vision des travaux scientifiques effectués dans les jardins botaniques. Des enfants de 10 à 12 ans se passionnent déjà lorsqu'on leur dissèque une fleur. Pourquoi les adultes ne seraient-ils pas passionnés à leur tour ? Il faut évidemment trouver le moyen technique permettant de s'adresser à un public relativement important, en particulier le soir. Il faut trouver des personnes capables de le faire et n'exigeant pas des salaires exorbitants !

Mais d'autres arguments doivent convaincre l'opinion publique, par exemple la nécessité d'augmenter les espaces verts et la culture d'arbres et de végétaux. N'avons-nous pas un argument-massue pour frapper l'opinion, et dont nous oublions souvent nous-mêmes l'importance, qui est celui de l'assimilation chlorophyllienne des plantes, sans laquelle aucune vie animale n'est possible ? Ceci nous amène à un slogan: "Pas de plantes, pas de vie animale". Seules les plantes font les synthèses organiques nécessaires à la nutrition animale. La création d'espaces verts contribue à la purification de l'air et au renouvellement de l'oxygène (photosynthèse).

J'insisterai aussi sur la collaboration qui doit se faire entre jardins botaniques et instituts de recherche pour l'alimentation mondiale. N'a-t-on pas déjà souvent brandi le spectre de la famine par suite de l'augmentation de la population du globe ? Des recherches scientifiques efficaces ne peuvent être faites que par des essais pratiques en jardin. Amélioration des races, sélection, étude des engrais, hydroculture en eau douce ou saline: tout ceci pourrait être développé et coordonné d'une façon spectaculaire.

Vachoux:

C'est une mission éminente que la collaboration entre l'horticulture et les botanistes et la popularisation des jardins botaniques, comme vient de le dire M. Correvon. Il a fallu une exposition et de la publicité pour que beaucoup de Genevois, qui n'étaient pas venus au Jardin botanique leur vie durant, y viennent. Mais il faudrait que dès l'enfance, à partir de l'école déjà les fondements d'une plus grande popularité de notre jardin botanique soient jetés: ceci n'est pas uniquement une tâche de l'Université.

Yeo:

The distribution of seed which is wrongly named is a long standing problem. The more one knows about botanic gardens the more one is aware of it. There is one small practical step one can take: if one finds one has a packet of seed under a wrong name, one can write a politely worded post card to the institution that sent it to one. I try to make a habit of this myself.

Prof. Hylander emphasized the desirability of keeping stocks of plants of known wild origin in cultivation. This is quite a difficult problem. We have the danger of seeding and vegetative spread. Another little known fact discovered by the cytogeneticists, is that polyploidy and ploidy arise during the vegetative growth of plants which are maintained in cultivation for a very long period. When the cytogeneticist comes to examine them, even if the wild origin is known, the cytology may be different from what it was in the wild population.

If one tries to make a general collection of plants of known provenance other difficulties arise. Suppose such a plant dies and one replaces it with another stock of the same species but of different origin; yet one does not know whether any propagules are left in the soil. Should such propagules germinate, one would finally have a mixture without knowing it, for the species would be the same.

One of the points in the talk of Dr. Fletcher was the problem to get the right kind of staff. The difficulties I have just mentioned can be controlled more easily if one has a staff with a scientific background: one requires somebody who will know the difference between two genera and perhaps even between two species of the same genus, and if there is any trouble will notice it. So one requires people with a scientific background, and yet one can to a large extent offer them only routine work. I wonder if Dr. Fletcher or anybody else has any interesting suggestion on the kind of person needed, and how he is to be obtained.

A further difficulty when growing plants of known wild origin is that very often, and especially with annual species, seed collected in nature does not germinate, or if it does the stock dies out after a year or two. On the other hand, seed from a botanic garden often germinates and grows much better, because it represents a stock that has been in cultivation for many generations and has adapted itself to the conditions in botanic gardens through unconscious selection.

Dr. Heine mentioned the work of Dr. Ludwig whose publications appear under the heading "Bestimmungsarbeiten in botanischen Gärten". These communications are very interesting, but it seems to me that they do not reach a wide enough public. Possibly we need some additional means of communication between one botanic garden and another.

Fletcher:

I can only comment on the last point: I cannot tell you how on earth you get hold of a scientific-minded horticulturist, pay him enough money and give him an interesting enough job to do. The point about lack of communication between botanic gardens is very clear and has been brought forcibly to my attention in recent months.

My colleagues and I have been trying to prepare a new edition of the International Directory of Botanic Gardens. We had to write to over 600 botanic gardens twice before we got about 45% of the information we should have got from our first letter. I am the first to admit there is very great scope indeed for some means of communication between one botanic garden and another. This can be done in various ways. I suppose it would be possible to have a "Bulletin of the International Association of Botanic Gardens". But a much more sensible matter in my estimation would be to use "Taxon", which is a well-established publication, if possible a special part or portion of "Taxon", for communications from botanic gardens.

Stafleu:

I shall communicate your wish to the editor of "Taxon". May be he is willing to do this—I am quite sure he is.

Fletcher:

There is one more question I really would like to raise. Most botanic gardens simply collect plants just as a person collects postage stamps. The botanic garden aims to get as big a collection as he possibly can, and then precious little scientific work is ever done on the collection, and the public is told very little about the collection. Is this not the greatest mistake? Is there not scope for what one might call "regional" collections? For instance why should two national botanic gardens

in Britain, Kew and Edinburgh, both grow a great collection of rhododendrons? I would have thought that there is scope only for one such big comprehensive collection of rhododendrons in botanic gardens in Britain. Why should the Royal Botanic Garden in Edinburgh and the Botanic Garden at Cambridge for instance, both try to grow mediterranean plants? They will not grow at all well in Edinburgh, and yet we still persist in trying to grow them, whereas Cambridge grows them so much better. Is there not scope for "regional" botanic gardens, more restrictive in their collections, instead of every garden trying to collect and grow the same taxa? Any plants grown in a botanic garden should be well grown; but many plants we see growing in botanic gardens are rather poorly grown.

Stafleu:

Obviously this is a question of communication. We have a first step in the IABG, but regional meetings would certainly also be useful. With respect to the delinquency of our colleagues in not sending information, I can tell Dr. Fletcher that my experience with the Index Herbariorum is about the same. After the fourth edition (his guide only reaches now its second edition) people consider it a status symbol to be in, and then it is much easier to obtain information.

Yeo:

It seems possible that a computerized collection of data from botanic gardens will make it easier for us to eliminate seed lists, because we can just ask for what we want by sending a list in to the computer center.

*Polunin:*¹

Dans son préambule magistral à notre symposium, mon vieil ami Sir George Taylor a fait allusion au problème de la conservation de la nature; mais il a été le seul qui a effleuré ce sujet, jusqu'à ce que le professeur Demaret y revienne justement cet après-midi. M. Demaret nous a donné un aperçu limpide sur quelques-unes des fonctions pour ainsi dire conservatrices de son jardin botanique, à Bruxelles — ce qui devrait être un bon exemple pour bien d'autres jardins botaniques importants.

Faisant suite à une suggestion du professeur Miège, j'ai préparé quelques remarques d'ordre général sur ce même sujet. Permettez-moi de les présenter brièvement.

¹ Contribution hors programme destinée à être présentée lors de la discussion générale, mais qui n'a pu être lue faute de temps.

Of the many valuable uses of botanical gardens and their ancillary research establishments, the conservational ones have long seemed to me among the most important—at least for the future, as human population-pressures and resultant degradation of the biosphere increase. For even as zoological gardens are inter alia the repositories of disappearing and “threatened” animal taxa, and may be their sole safeguard against extinction, so are botanical gardens and some other preserved tracts for the often no less dangerously (but commonly less “vocally”) threatened plants which, as botanists, it should be our active concern to preserve in the living state.

For such preservation, albeit in an artificial or anyway manmade environment, the important prerequisites are (1) to recognize which taxa are seriously threatened with extinction, (2) to acquire sufficient knowledge of their habitat requirements and conditions for propagation to be able to satisfy these within the confines of a botanical garden or, often, greenhouse, and (3) to bring these endangered plants into effective cultivation or anyway “captivity” in good time. Moreover, by instructing potential cultivators in the necessary “arts”, botanical gardens can relieve the pressure on those wild species which are threatened by being too much sought after by commercial collectors, through engendering their cultivation in nurseries instead of decimation of the wild populations: who among the admiring public will worry about whether his edelweiss comes directly from an alpine peak provided it is really *Leontopodium alpinum* (fortunately I do not think we have any close counterparts of the “wild Mink” situation in the botanical world!). As was agreed by our Middle East hosts during the IUCN Ecology Commission’s advisory meeting in Turkey last autumn, the same principles should hold good for their own attractive bulbous Monocotyledons and other plants that are alarmingly sought and collected for export by commercial enterprises which themselves would surely do better in the long run through properly organized cultivation. So the wild remnants could be left alone—soon, one would hope, to recover something like their former numbers.

In preserving special species and strains of known origin, generation after generation, in botanical gardens, it is often important to keep their germ-plasm pure, avoiding hybridization, etc. This may require special protective measures, and is notably necessary for research purposes or when economic aspects are being furthered—for example by distribution to distant lands for cultivation for industrial or medicinal purposes. For besides distribution novelties and rarities, and perpetuating them under controlled conditions, botanical gardens can perform a valuable function by distributing suitable strains of economic plants, after adequate trials, to areas which are agroclimatically analogous. This effectively extends their function of sheltering threatened or other species, and is exemplified (without adequate trials) by Kew’s consignment of *Hevea brasiliensis* to Malaya in H. N. Ridley’s day. The maintenance in pure form of primitive strains of known provenance can also be of importance in the elucidation of the origins of cultivated plants: this, too, is conservation sensu latissimo.

And then there is the matter of threatened ecosystems and biocoenoses, and the importance of their protection not only in strict nature reserves but also, so far as this can be done, in “biological gardens” which combine plant with animal maintenance. When I first went to Ibadan some years ago, I found that the nucleus of just such a biological garden had been set up by enterprising elements in the old Nigerian College of Arts, Science, and Technology which, being extended at

minimal cost by paths cut in the surrounding jungle, was apt to attract far more visitors and engender far more interest than the nearby much larger and more costly, specially staffed and formal University Botanical Garden. In our shoestring-operated Biological Garden we maintained the local biota in as little-disturbed and natural a state as possible, though we allowed ourselves the liberty of special enclosures and even cages for special animals or sometimes plants when necessary. But these, too, were in natural settings, and widely appreciated as such; for inter alia they looked far healthier and happier than their counterparts in the local formal zoological and botanical gardens. For obvious reasons we made it a rule to enclose exotic animals, and did our best to safeguard introduced plants on one hand from the ravages of local predators, human and otherwise, and, on the other, against undue multiplication and spread. *Eichhornia crassipes* was a case in point, while the deadly Gabon Viper could obviously not be let loose, nor could the hard-biting Baboons! Yet in all such work, and likewise in many other enterprises, the educational and other advantages of natural settings are immense, the beneficiaries ranging from small schoolchildren to venerable research biologists. To my mind a biological garden should maintain—or where necessary engender—“natural” settings to the hilt of human-limited possibility. It should also maintain as wide as possible a range of local ecosystems and biocoenoses, in reasonable proximity, in a minimally disturbed state, before such features become mere disappearing curiosities requiring extensive travel to observe.

Finally one might mention the cases of special gene-banks, gene-pools, and plantations of important agricultural and horticultural strains, which are often best given homes in botanical gardens, and of possible “mating-bureaux” for dioecious plants or other relies which become depleted of biotypes under the protective monoculture conditions of botanical gardens and nurseries. For we, too, have our botanical counterparts of Giant Pandas and Arabian Oryxes, and to us they may be no less attractive and important than these special cases are to our zoological colleagues.