

XI. STUDIES ON THE ACANTHACEAE OF THAILAND

Bertel Hansen

Botanical Museum and Herbarium

Gothersgade 130

DK-1123 Copenhagen K.

Denmark

After the completion of his large treatment of the Acanthaceae for the *Flore de l'Indo-Chine* (1935) R. Benoist gave up any further study of the Acanthaceae of S.E. Asia. A very rich and almost unattended material of the family collected in Indochina during the following years accumulated in the Paris herbarium. By this time the well-known, Dutch acanthologist, C.E.B. Bremekamp, commenced studies in the Acanthaceae. For thirty years he published a wealth of papers on the subject until he in the late sixties due to failing eyesight was forced to give up his taxonomic activities. He has identified many of the early collections from Thailand made by Danish botanists and he published a few enumerations containing quite a number of new taxa.

Simultaneously after the appearance of the Acanthaceae in the *Flore* Joan B. Imlay, Aberdeen, took up an intense study of the Thai representatives of the family. A fairly large paper with many new species and new combinations appeared in the *Kew Bulletin* (1939). A few years ago I learned from Mr. L.L. Forman, Kew, that she shortly afterwards went to South Africa and apparently ceased working in botany.

During the last few years the family has been studied locally, e.g. in India by S.S.R. Bennet, J.L. Ellis, H. Santapau and C.P. Sreemadhavan, in Bangladesh by Enayet Hossain, who extended his studies to India and S.W. China as well, in China by H.W. Li and H.S. Lo, and in Borneo by B.L. Burtt and R.M. Smith. However, since Bremekamp ceased his activities very little work has been done in the Indochinese peninsula and the vast Flora Malesiana area. Having realized this taxonomic vacuum I started in the late seventies to collect literature on the family with an emphasis on S.E. Asia. This list now contains more than 700 items.

During a meeting in Kyoto in 1979 I met the young Japanese student Hiroshi Terao who was already deeply involved in monographic work on *Strobilanthes*. He willingly accepted to do this genus for the Flora of Thailand, also. It was a great relief to me to leave this large genus to him and I have had many fruitful discussions with him, especially when he later on visited Europe. I was delighted to see a draft of his still unpublished thesis in late 1982, a treatment on its generic delimitation and infra-generic classification. You will understand my surprise and disappointment when in January 1984 I got a message from him, that he had given up his taxonomic studies entirely and had started a small, private school in his hometown. In my later letters to him I have urged him to reconsider this decision and I also suggested that he could go on with *Strobilanthes* in his spare time, as e.g. Seidenfaden did with the orchids for many years along with his job as an Ambassador.

Another great surprise was in store for me when I learned during a visit to Kew in 1980 that Imlay had written a Ph.D. thesis in 1938 titled "The taxonomy of the Siamese Acanthaceae" of no less than 499 typewritten pages. This thesis apparently had been filed in the University Library in Aberdeen without the botanical world knowing about its existence. There are now copies of it in Kew and in

Copenhagen and I have the impression that Terao has a copy of at least *Strobilanthes*. The entire paper is in English and all the new species and combinations consequently date from the later paper in the *Kew Bulletin* (1939). This thesis of course forms a wonderful base for a flora worker and monographer, although now it is outdated in many places. If I may raise a slight criticism, Imlay showed too much respect for older authorities. She could/should have corrected many taxonomic and nomenclatural errors already apparent at her time.

There was yet another surprise at Kew: Victoria Graham (1978) had recently produced a large thesis on a world-wide scale on *Justicia*. It consists of a very thorough analysis and evaluation of taxonomic characters. She arrived at the same conclusion in *Justicia* as Terao did in *Strobilanthes* with which I fully agree: Bremekamp's numerous segregates from these two genera have no standing at the generic level. Her conclusions have many new combinations as a consequence, but this thesis also is still unpublished, and I have felt it better to concentrate on other genera instead of mixing with her work. It now seems that Dr. R.K. Brummitt has succeeded in obtaining a manuscript for the publication of at least these names.

Thus at least temporarily relieved from work in *Justicia* and *Strobilanthes* I could concentrate on problems in some of the smaller genera. A few of them will be commented on below, but first I shall give a list of the genera in Thailand with the number of their species there.

#### Thai Acanthaceae (40 genera, c. 230 spp.)

##### Subfamily I. Thunbergioideae

0 cystoliths, shoots not articulated, 0 retinacula, seeds basal.

1. *Thunbergia* Retz. (6)

##### Subfam. II. Nelsonioideae

0 cystoliths, shoots not articulated, 0 retinacula, seeds evenly inserted.

2. *Nelsonia* R. Br. (1)
3. *Ophiorrhizophyllum* Kurz (1)
4. *Staurogyne* Wall. (c. 25)

##### Subfam. III. Acanthoideae

0 cystoliths, shoots not articulated, + retinacula, seeds apical.

5. *Acanthus* L. (3)
6. *Blepharis* Juss. (1)
7. *Crossandra* Salisb. (1)

##### Subfam. IV. Ruellioideae

+ cystoliths, shoots articulated, +/(0) retinacula, seeds apical or evenly inserted, rarely basal.

Tribe A. Ruellieae

Corolla contort. Stamens 2 or 4. Ovules 4—more. Capsule with solid base or with the locules extending to its base.

8. *Dyschoriste* Nees (1)
9. *Echinacanthus* Nees (1)
10. *Eranthemum* L. (6)
11. *Hygrophila* R. Br. (6) (incl. *Cardanthera* Voigt, *Hemiadelphis* Nees, *Nomaphila* Bl., *Synnema* Benth.)
12. *Phaulopsis* Willd. (1)
13. *Ruellia* L. (6) (incl. *Aporuella* C.B. Clarke, *Dipteracanthus* Nees)
14. *Strobilanthes* Bl. (c. 55)

Tribe B. Lepidagathideae

Corolla imbricate. Stamens 4. Ovules 4. Locules of the capsule extending to its base.

15. *Chroësthes* Benoist (2)
16. *Lepidagathis* Willd. (66)
17. *Neuracanthus* Nees (1)

Tribe C. Andrographideae

Corolla imbricate. Stamens 2. Ovules 6—many. Locules of the capsule extending to its base.

18. *Andrographis* Nees (2)
19. *Graphandra* Imlay (1)
20. *Gymnostachyum* Nees (7)
21. *Phlogacanthus* Nees

Tribe D. Justiceae

Corolla imbricate. Stamens 2 or 4. Ovules 4. Capsule with solid base (locules extending to it in Barleria).

Subtribe a. Barleriinae.

Upper lip of corolla without stylar furrow. Stamens 4 or 2 with 2 staminodes.

22. *Asystasia* Bl. (2)
23. *Asystasiella* Lindau (1)
24. *Barleria* L. (5)
25. *Clinacanthus* Nees (1)
26. *Codonacanthus* Nees (1)
27. *Cosmianthemum* Bremek. (1)
28. *Graptophyllum* Nees (1)
29. *Pseuderanthemum* Radlk. (8)
30. *Thysanostigma* Imlay (1)

Subtribe b. Isoglossinae

Upper lip of corolla without stylar furrow. Stamens 2. Staminodes 0.

31. *Dicliptera* Juss. (4)
32. *Hypoëstes* R. Br. (2)
33. *Isoglossa* Örst. (2)
34. *Leptostachya* Nees (1)
35. *Marcania* Imlay (1)
36. *Peristrophe* Nees (4)
37. *Ptyssiglottis* T. Anders. (2)

Subtribe c. Justiciinae

Upper lip of corolla with stylar furrow. Stamens 2. Staminodes 0.

38. *Justicia* L. (c. 40)
39. *Rhinacanthus* Nees (1)
40. *Rungia* Nees (10)

A few comments on this list might be appropriate.

*Thunbergia* could be taken out of the family and could very well constitute a family of its own. On the other hand I find that Sreemadhavan (1977) went much too far in establishing the *Justiciaceae* and *Nelsoniaceae* apart from the *Acanthaceae*.

The *Nelsonioideae* cause no problems apart from some reductions in *Staurogyne* where Bremekamp (1961, 1965, 1969) raised too many species and Enayet Hossain (1972) also overdid it.

The *Acanthoideae* are free from problems. It may be debated whether *Crossandra* should be excluded from the list or not. It is hardly indigenous.

In the *Ruellieae* you will get into real trouble if you accept all the species described in *Hygrophila* and *Ruellia*. I have chosen to distinguish less and rather variable species. I have enclosed a number of former segregates in them here. *Strobilanthes* is a large and difficult genus of at least 55 species, I think.

In the *Lepidagathideae* there are only small problems left. As is seen from my paper on *Chroësthes* Hansen (1983) the genus often has been referred to *Asystasia*. For a long time I thought that *A. kerrii* Craib was the oldest name for the species common in N. Thailand. However, the description of *Asystasia lanceolata* T. Anderson (1867) made me uneasy. I finally got the specimen from Calcutta and could identify it with our common species. However, *Strobilanthes xanthosticta* Hosseus (1907) escaped my attention until recently! It should be included in the synonymy. In the *Acanthaceae* everything may be expected!

In other *Andrographideae* *Andrographis* is represented in Thailand by two wide-spread species, one of which is highly variable. A form also found in Thailand was recently described from Yunnan as a new genus and species, *Haplantoides yunnanensis* H.W. Li (1983). *Graphandra*, an endemic of Thailand, looks like a small *Gymnostachyum* with a 4-partite calyx. *Phlogacanthus* includes here *Cystacanthus* T. Anders. and *Diotacanthus* Benth.

In the *Justicieae* the *Barleriinae* contain a number of monotypic genera. In

*Pseuderanthemum* there are some difficulties with the specific delimitation. *Antheliacanthus* Ridl. is one of its species with cleistogamous flowers.

In the *Isoglossinae* there are quite a few problems. *Dicliptera* and *Peristrophe* are a particular pair separated only by the raised placenta found in the fruits of *Dicliptera* and not in *Peristrophe*. In a practical treatment for a flora all their species will have to go into a single key because fruits are quite rare in herbarium specimens. It should be noted that some of the species have resupinate corolla obtained by a 180° torsion of the tube. In a forthcoming paper *Isoglossa*, formerly only known from Africa, will be shown to be represented in Asia with no less than 8 species, of which 2 in Thailand. These were formerly known in the Old World as species of *Dianthera* L., *Justicia*, or *Strophacanthus* Lindau. *Leptostachya* is a complicated case on which there is a paper in print. I accept only a single species which occurs in Thailand in various forms. It was earlier known as *Dianthera* or *Justicia*. *Marcania* is a remarkable, monotypic genus endemic to S.W. Thailand, where it is a strongly woody shrub, 2—4 m high, on limestone. *Ptyssiglottis* is represented in Thailand by two species formerly known as *Polytrema*. Only recently I became aware that *Asystasia kunthiana* Nees (1832) represents the common *Polytrema vulgare* C.B. Clarke. A revision of the whole complex is under preparation and involves large parts of *Hallieracantha* Stapf from Borneo besides *Ancylacanthus* Lindau and *Oreothyrsus* Lindau from New Guinea and the Philippines.

Finally, in the *Justiciinae* we have besides *Rhinacanthus* another pair of genera, *Justicia* and *Rungia*, separated only by the fruits having raised placentas in *Rungia*. This situation, already referred to in *Dicliptera* / *Peristrophe*, is also found in the African pair *Anisotes* Nees / *Metarungia* Baden (1984). I much doubt the value at generic level of this character, but I do not think that the botanical society would follow me in joining *Justicia* and *Rungia*. Have you realized, by the way, that the well-known *Justicia gendarussa* Burm. f. has raised placentas and thus would need to be transferred to *Rungia*? Probably not, because it almost never sets fruit, but when it does, it is a *Rungia*. Here is another of the obvious slips in Imlay's thesis. She discovered correctly at least 10 species of *Justicia* in Thailand with raised placentas, but she failed to transfer them *Rungia* — or to merge *Rungia* with *Justicia*.

I should like to end this survey with a note to future collectors of *Acanthaceae*: please collect extra flowers for palynological investigations, which are so important in this family. Many species have only two stamens and they contain relatively few pollen grains. I would also ask you to collect ripe fruits with seeds (put a small bag over them before they explode!). Fruits ripening in the press do not contain seeds with a fully developed testa. I have a feeling that the testa develops during the last few hours of ripening under natural circumstances, only.

#### Literature.

- ANDERSON, T. 1867. An enumeration of the Indian species of *Acanthaceae*. *J. Linn. Soc., Bot.* 9: 425—526.
- BADEN, C. 1984. *Metarungia*, a valid name for *Macrorungia* auctt. (*Acanthaceae*). *Kew Bull.* 39: 638.
- BENOIST, R. 1935. *Acanthaceae* in H. Lecomte, *Fl. Gén. I.-C.* 4: 610—772. Paris.

- BREMEKAMP, C.E.B. 1961. Scrophulariaceae-Nelsonieae, Thunbergiaceae, Acanthaceae, in *Studies in the flora of Thailand*. Dansk Bot. Ark. 20: 55—88.
- , 1965. Scrophulariaceae-Nelsonieae, Thunbergiaceae, Acanthaceae, in *Studies in the flora of Thailand*. Dansk Bot. Ark. 23: 195—224.
- , 1969. Scrophulariaceae-Nelsonieae, Thunbergiaceae, Acanthaceae, in *Studies in the flora of Thailand*. Dansk Bot. Ark. 27: 71—85.
- BURMAN, N.L. 1768. *Flora indica*: 1—241. Leiden, Amsterdam.
- CLARKE, C.B. 1908. Acanthaceae, in G. King & J.S. Gamble, *Materials for a flora of the Malayan peninsula*. J. As. Soc. Beng. 74, 2, extra: 628—698.
- ENAYET HOSSAIN, A.B.M. 1972. *Studies in the Acanthaceae tribe Nelsonieae*. 1. New and re-named taxa. Not. Roy. Bot. Gard., Edinburgh 31: 377—387.
- GRAHAM, V.A.W. 1978. *Taxonomic studies in Justicia*. Unpublished Ph.D. thesis. c. 400 pp. University of Reading.
- HANSEN, B. 1983. Notes on the genus *Chroëstes* (Acanthaceae). Nord. J. Bot. 3: 207—211.
- HOSSEUS, C.C. 1907. Die aus Siam bekannten Acanthaceae. Bot. Jb. 41: 62—73.
- IMLAY, J.B. 1938. *The taxonomy of the Siamese Acanthaceae*. Unpublished Ph.D. thesis. 499 pp. Aberdeen (copies in ABD, C, K).
- , 1939. Contributions to the flora of Siam. *Additamentum* 51. New and re-named Siamese Acanthaceae. Kew Bulletin: 109—150.
- LI, H.W. 1983. A new genus of Acanthaceae from Yunnan. Acta Phytotax. Sin. 21: 470—472.
- NEES VON ESENBECK, C.G. 1832. *Acanthaceae Indiae orientalis, N.W. Wallich, Plantae asiaticae rariores* 3: 70—117. London.
- SREEMADHAVAN, C.P. 1977. Diagnosis of some new taxa and some new combinations in Bignoniales. Phytologia 37: 412—416.
- TERAO, H. 1982. *Taxonomic study of the genus Strobilanthes Bl. (Acanthaceae)*. Generic delimitation and infrageneric classification. Unpublished Ph.D. thesis. 104 pp. Kyoto University (copies in C, KYO).