The Flowering of the Strobilanth
(Acanthaceae)
(Strobilanthinae sensu Bremekamp)

BY
K. M. Matthew, s.j.
St. Joseph's College, Tiruchirapalli

' Strobilanthes ' popularly refers to a large group of gregarious shrubs characterized by outbursts of profuse flowering at fairly regular intervals of 3 to 14 years, mostly of 4 to 7 years, and the plants (with some exceptions) dying off after dispersal of the seeds. Bremekamp (1944) used the term 'plietesials' for such monocarpic plants that take several years to reach maturity before flowering. This growth form is not rare in the tropics and subtropics.

In India this group occurs on the hills and at the foothills; more abundantly in the south, especially on the Nilgiris and Palnis. This noteworthy group of plants attracted the special attention of the first explorers of the Indian flora. The plants grew so densely that the seedlings of the forest trees could hardly survive under them. Schemes of organized eradication of these plants were considered imperative for efficient forestry (Gamble 1888; Osmaston 1904). As to their occurrence in India, Clarke (1888) refers to 146 species, and Gamble (1924) to 46. Fyson (1932) refers to only 19, but all occurring above 1500 m. on the south Indian hills. Several of the species have been illustrated by Wight (1838-53; 1840-50; 1846-51), Beddome (1869-74), Fyson (1932) and Robinson (1935).

The present paper deals with: (1) a survey of published data regarding the periodicity of flowering; (2) the possible cause of the special manner of flowering; (3) the taxonomy of the group. An exhaustive bibliography is given since the main purpose of this paper is to stimulate research on this plant group.

The best known in south India is Strobilanthes kunthianus (Nees) T. And. (=Phlebophyllum kunthianum Nees) famous for the copious, fragrant blue flowers (ranging from pale lilac blue to deep purplish blue) at regular intervals of 12 years. These flowerings were such a landmark in the lives of the hill tribes in former days that they used to recall the main events of their lives with reference to the flowerings they had witnessed. The kurinjimalar ('flower of the hills') of the Tamil classics probably refers to this plant. The recent flowerings provoked more than
usual interest on account of publicity through newspapers and radio, and
drew crowds to the hills.

Nine consecutive flowerings at regular intervals of 12 years between
1838 and 1934 on the Nilgiris are mentioned by Robinson (1935) ; as for
the Palnis, Matthew (1959) has recorded five such flowerings between 1910
and 1958. With the general flowering of 1970, there is an impressive
record of 12 consecutive flowerings at regular intervals of 12 years for
south India.

Formerly when large tracts of land were covered by this plant, the
years of flowering attracted numerous swarms of honey bees. The rock
bee (Apis dorsata) and the common honey bee (Apis indica) used to
migrate in large numbers to regions of flowering ; Robinson (1935) has
recorded certain interesting facts and figures regarding the number of
hives of bees seen at Kodaikanal. The season of dispersal of seeds was
reported to have caused mass migration of jungle fowls from the foothills
on the Nilgiris. These, however, are a memory of the past, with the area
under the plant fast diminishing owing to denudation of virgin land for
cultivation. The flowering of 1958, and more so that of 1970, was con-
spicuous for the absence of such visitors.

In 1970, the mass flowering at Kodaikanal started about February with
the close of winter and came to a peak in April-May. Though confined
largely to isolated patches, the flowering was still impressive in the
Shembaganur, Poomburai, Vembadi and Berijam areas. Robust speci-
mens exceeded 2 m. tall (Matthew 11457) ; plants in flower as small as
9 cm. tall were recorded too (Matthew 11459 a). Stunted plants are the
rule at altitude above 2000 m. exposed to incessant wind. Matthew
11458 had completely white flowers.

Among the other species with published data are S. rufescens T. And.
(C. W. A. B. 1895) ; S. sessilis Nees (J. L. L. McG. 1895 ; Murray 1896) ;
S. wallichii Nees (A. S. 1895 ; Osmaston 1904) ; S. callosus Nees (Fagan
1896 ; Santapau 1944, 1950a, b, 1951 ; Murray 1896) ; S. pectinatus
T. And. and S. helictus T. And. (Osmaston 1904) ; and S. neilgherrensis
Bedd. (Bowden 1950).

There are several questions that need to be answered as regards these
plants. Even in the case of S. kunthianus (Nees) T. And. where the evi-
dence for the 12-year cycle of flowering is fairly certain, there are dis-
cordant data that should be considered. Among many such reports,
Gamble (1888) speaks of intervals of 4-6 years ; Fyson (1932) of 7-12
years. The present author himself has noted stray flowers of S. kunthianus
(Nees) T. And. almost every year between two mass flowerings ; these
stray blossoms being more abundant in the year preceding the mass
flowering. In fact the undue publicity given to the flowering of 1969 on
the Palnis was of such a one ! Much of the published data on the flower-
ing seem to be uncritical especially in the case of species other than S.
Another source of error could be that such reports of mass flowerings pertain only to small areas. The following is such a one that the present author studied. On September 17, 1960 (1958 was the year of the previous mass flowering), he observed a region between milestones 38-4 and 37-2 of the Goschen Road near the Astrophysical Observatory, Kodaikanal, when many plants were in flower. There seemed to have been plants of at least four different stages of development here: (1) those in flower then; (2) an equal number of plants not going into flower that year; (3) those that had flowered in 1958 and preserved as dry twigs; (4) some plants 10-15 cm. tall, uniform in size with seedlings from the seeds of the 1958 mass flowering abundant in places where general flowering occurred in 1958. Among those in flower, there was a notable degree of variation in size: the biggest were up to 3 m. tall with a maximum internodal diameter of 2 cm. (Matthew 1693); a few plants as small as 20 cm. tall with just 3-4 flowers each (Matthew 1691); the majority of plants of intermediate size, 1-1.5 m. tall (Matthew 1692).

Cases like this, probably caused by special ecological factors, may not be rare, and might account for reports of aberrant flowerings.

There has been little study on the possible causes of this type of flowering. The study of the physiology over the maturing years of these plants may throw light on the long intervals of flowering. Why and how is the flowering hormone released in such abundance? Why do the plants die after flowering? How is their nutritional physiology affected? Is the report of the production of large number of tyloses generally verified, and if so, has it anything to do with the death of the plants? Do all the viable seeds germinate simultaneously during the year following their dispersal? Can seeds be kept viable for several years, so that if some of these could be germinated and planted out every year for 11 consecutive years, flowering thereafter should occur every year?

Careful field studies with special reference to factors like rainfall, temperature, exposure, etc. and in the laboratory over a period of several years on the hills are necessary to answer these questions; may be this is one of the problems to be studied in a future botanical laboratory on the hills.

Finally, the taxonomy of the group should be worked out in the light of answers to these questions. Data from cytology, anatomy, histology, embryology and biochemistry are yet to come; pollen morphology has proved diagnostic and has been effectively used by Bremekamp (1944), probably after Radkofer (1883). Whereas Indian floras treat 'Strobilanthes' in a broad sense, Bremekamp (1944) has split the sub-
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tribe Strobilanthes into 54 genera. In this sense, the genus *Strobilanthes* does not occur in India.

A comprehensive Indian monograph on the group is an urgent need, especially since Bremekamp (1944) had not sufficiently studied Indian material. Such a work will be difficult but prove to be a landmark in Indian botany.

In conclusion it should be pointed out that this type of gregarious and periodic flowering so much talked of in the Strobilanthes is after all not so rare in nature. Bamboos flower gregariously and only once in their lifetime; several forest trees, as certain members of Dipterocarpaceae, do not seem to flower regularly every year. For an observant botanist, our forest trees may prove to be matter for fruitful study.

Whereas laboratory studies are essential in knowing our plants better, careful field studies are equally important. Maybe a plea for intensified and improved field studies is truly appropriate to commemorate Fr. Santapau whose death occurred in a year of mass flowering.

The author thanks Prof. B. G. L. Swamy for useful suggestions.

References


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