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# SOME USEFUL WEEDS OF BARODA, ITS NEIGHBOURHOOD, AND PAVAGADH.

By V. G. PHATAK AND G. M. OZA.

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# Some Useful Weeds of Baroda, its Neighbourhood, and Pavagadh

BY

V. G. PHATAK, D.SC. AND G. M. OZA, M.SC.

*Department of Botany, M.S. University of Baroda*

## INTRODUCTION

Weeds grow everywhere and can tolerate almost any set of climatic conditions; they usually spring up with the first showers of the monsoon and continue as long as there is enough moisture in the ground.

We have been deeply interested in the study of the weeds occurring in the city of Baroda and its neighbourhood, particularly on Pavagadh Hill, 29 miles NE. of the city; we have made ample collections and recorded plenty of data, some of which we wish to present in the present paper. In our first paper we dealt with the weeds of the University Campus (1957); we paid attention to the various uses made of these weeds from the medicinal point of view; such information was obtained in the first instance from local Ayurvedic practitioners, and in this respect our data were of interest as being first-hand and authoritative.

In successive years we have extended the field of our activities to include the whole city of Baroda and the slopes of Pavagadh Hill. In the present paper we list only such plants as we have found to be used medicinally in the district under study. We give our plants following the order of Cooke's FLORA OF THE PRESIDENCY OF BOMBAY. The names enclosed within brackets after the scientific ones are names used locally for the plants.

## LIST OF USEFUL WEEDS

### PAPAVERACEAE

1. **Argemone mexicana** Linn. (Darudi)

A prickly herb, in flower most of the year. The oil from the seeds is used in skin diseases and ulcers. The roots are purgative.

CAPPARIDACEAE

2. **Cleome viscosa** Linn. (Kanfuti)

An erect, gladular herb; flowering in July to September. The juice of the leaves is used for headache and poured into ears for ear-ache. The seeds are carminative and are used to kill intestinal worms.

3. **Gynandropsis gynandra** Briq. (Tanmani; Adhiyakaran; Aadiyakarson)

An erect herb, flowering in July to November. A decoction of the root is given in fever. The juice of the plant is useful for scorpion-sting and fever. It stops pains of the body and ear trouble. The oil is used for skin diseases.

CARYOPHYLLACEAE

4. **Polycarpaea corymbosa** Lamk. (Jinapan Okhrad)

A herb, flowering in September to October. The application of the vegetative parts cures poisonous bites.

PORTULACACEAE

5. **Portulaca oleracea** Linn. (Moti Luni)

A succulent prostrate herb, flowering in March to December (almost throughout the year). As a pot herb it cures the diseases of the blood and stops urinary troubles.

ELATINACEAE

6. **Bergia odorata** Edgew. (Lavariyu; Runvad)

A decumbent herb, flowering in March to November. A paste prepared from the plant is used on scorpion-sting.

MALVACEAE

7. **Sida veronicaefolia** Lamk. (Bhonyabala)

A prostrate spreading herb, flowering in September to January. The leaves are applied on cuts and bruises.

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[1] [Mhaskar. K. S., and Caius, J. F., in 'Indian Plant Remedies used in Snake bite' (*Ind. Med. Res. Memoirs*, No. 19, Jan. 1931) write: "We have every reason to believe that our work is exhaustive, and we may safely *conclude that none of the Indian plants recommended for the treatment of snake-bite has any preventive, antidotal, or therapeutic effect.*" The same authors after an exhaustive study of plants or plant combinations used in the treatment of scorpion sting, write: "None of the Indian Plant Remedies popularly used in the treatment of scorpion sting has been found to have any preventive, antidotal, or therapeutic effect."—EDS.]

8. **Sida spinosa** Linn. (Kantalobal; Gangeti)

An erect herb, flowering in October to April. The plant cures wounds, ulcers, and disorders of the bile. The root is a tonic, good for heart disease and asthma.

9. **Sida acuta** Burm. (Bala)

An undershrub, flowering in September to December. The root is utilised in nervous and urinary diseases.

10. **Sida cordifolia** Linn. (Mahabala; Khapat)

A velvety herb, flowering in September to December. The juice of the roots, leaves, and bark heals ulcers and wounds. Plant is used for urinary diseases, disorders of blood, and scurvy. The roots are applied on scorpion-sting.

11. **Abutilon indicum** Sweet (Kansaki)

A tall herb, flowering in May to November (almost throughout the year). The roots are used for fevers, cough and leprosy. The roots and leaves are taken internally for snake bite and urinary troubles.

TILIACEAE

12. **Triumfetta bartramia** Linn. (Jipati)

An undershrub, flowering in August to September. The plant increases the secretion of milk in females. It reduces swellings. The seeds are given in cases of dog-bite. The leaves are used in dysentery.

13. **Triumfetta rotundifolia** Lamk. (Jipato)

A herb or an undershrub, flowering in August to October. Used as a demulcent.

14. **Corchorus aestuans** Linn. (Jiteli)

An erect or prostrate herb, flowering in August to October. The seeds are used in pneumonia and the roots for cough.

ZYGOPHYLLACEAE

15. **Tribulus terrestris** Linn. (Gokharu)

A spreading herb, flowering in August to October. The entire plant with its fruits is useful in kidney diseases and for ulcers.

OXALIDACEAE

16. **Oxalis corniculata** Linn. (Aamalati; Khati Luni)

A tiny creeping herb, flowering in July to October. The plant is a remedy for scurvy and is given to relieve the effects of opium. Good for head-ache.

PAPILIONACEAE

17. **Tephrosia purpurea** Pers. (Sarapankho)

An undershrub, flowering in June to November. The plant is a tonic and has the property of purifying the blood. A decoction of the root is used for urinary troubles and its smoke stops cough. Oil from the seeds is best for eczema.

CAESALPINIACEAE

18. **Cassia occidentalis** Linn. (Kasundaro)

An undershrub, flowering in August to December. Externally, the seeds and leaves are applied on skin diseases, and for swellings. The roots are used in snake bite. Leaves are good for asthma, cough, and indigestion. The fruits are also used for cough.

19. **Cassia tora** Linn. (Kunvadiyo)

An erect herb or an undershrub, flowering in July to October. Used as a pot-herb, only after the first showers of rain, and has the property of curing cough, asthma, leprosy, and gastric troubles. It kills intestinal worms. Good for headache and promotes urinary discharges. The roots and seeds are applied on swollen parts and skin diseases. The roots purify the blood. An infusion of the plant is given to the animals infested with worms.

CUCURBITACEAE

20. **Coccinia indica** Wt. et Arn. (Tindora; Gholi; Gilodi)

A climber, flowering in July to September. The juice of the leaves and roots has a cooling effect and is used in diabetes. The flowers are used in disorders of the bile and jaundice. The fruits are applied on swollen parts and are used for disorders of the blood. As a pot herb it cures anaemia.

MOLLUGINACEAE

21. **Trianthema monogyna** Linn. (Vasu)

A prostrate succulent herb, flowering in April to November. The juice of the plant is a tonic for old age. A decoction of the roots is used for fevers, swellings and scorpion-sting.

RUBIACEAE

22. **Oldenlandia corymbosa** Linn. (Pitpapdo)

A small, delicate herb; flowering in July to October. The juice of the plant has a cooling effect. Used in jaundice. It is a blood purifier.

23. **Borreria hispida** Schum. (Madhuri Jadi)

A small herb, procumbent as well as decumbent; flowering in July to October. The plant is used in toothache.

COMPOSITAE

24. **Vernonia cinerea** Less. (Shahadevi)

A herb, flowering in July to September. The plant juice cures piles. The root is useful for dropsy. The juice of the roots is used in fever.

25. **Ageratum conyzoides** Linn. (Makadmari ; Ajgandha)

An erect herb, flowering in August to February. The plant is used for leprosy and diseases of the skin. The leaves heal cuts.

26. **Grangea maderaspatana** Poir. (Mundi)

A prostrate spreading herb, flowering in April to July. The juice of the plant is useful for irregular menses and pains of the ear.

27. **Sphaeranthus indicus** Linn. (Bodiyo Kalhar; Kalar; Gorakh Mundi)

A herb, flowering in December to January. The plant is a tonic used for ulcers, cough, anaemia, and asthma. The juice of the plant cures jaundice, leprosy, gastric troubles, wounds, and disorders of the bile. The fruits are applied for rheumatism.

28. **Xanthium strumarium** Linn. (Gadariun)

A herb, flowering in September to April. It is useful in malaria and improves appetite.

29. **Eclipta prostrata** Linn. (Bhangro)

An erect or prostrate herb, flowering in July to December. The root is useful for skin diseases. The plant has a cooling effect for the eyes, and keeps hair black if mixed with the oil. Used for cough, asthma, leprosy, and anaemia. It checks sexual appetite.

30. **Tricholepis glaberrima** DC. (Utkatari; Utkanti)

An erect, spinous herb; flowering in January to April. The plant is a tonic. The roots and seeds are useful. The root bark is used in urinary troubles. The roots are applied on snakebites and scorpion-stings. The roots if taken internally cure cough.

31. **Launaea nudicaulis** Hook. f. (Bhonypatri)

A prostrate spreading herb, decumbent; flowering in June to March. It checks fever.

ASCLEPIADACEAE

32. **Calotropis gigantea** R. Br. (Aakado)

A milky shrub, flowering throughout the year. The plant is a superlative remedy for leprosy, piles, intestinal worms, cough, dropsy, and skin diseases. It is good for digestion. Application of the milky juice relieves ordinary pains of the body. It is purgative. The roots are used for jaundice and its bark enhances perspiration. Oil boiled with the leaves is applied in paralysis. The leaves are used for headache and serpent bite. The flowers cure fevers and cough.

33. **Calotropis procera** R. Br. (Dholo Aakado)

A small shrub, flowering throughout the year. Its uses are the same as those of *C. gigantea* R. Br.

34. **Leptadenia reticulata** Wt. et Arn. (Nani Dodi)

A twiner, flowering in May to October. The plant is a tonic and a substitute for vegetables.

GENTIANACEAE

35. **Enicostemma verticillatum** (Linn.) Engler. (Kadavi Nai)

An erect herb, flowering in June to September. The plant purifies the blood. It is also used for hernia.

BORAGINACEAE

36. **Coldenia procumbens** Linn. (Okhrad)

A procumbent herb, flowering in August to October. The leaves are used for boils and rheumatism.

37. **Heliotropium marifolium** Retz. (Hathi Shundhan)

A decumbent herb, flowering in June to September. Tender shoots of the plant cure ulcers. The leaves are applied on scorpion-sting.

CONVOLVULACEAE

38. **Evolvulus alsinoides** Linn. (Jini Fudardi)

A prostrate herb, flowering in June to December. The plant is used in dysentery and is a good tonic for asthma.

39. **Convolvulus microphyllus** Sieb. ex Spr. (Shankhavali)

A prostrate herb, flowering in June to January. The juice of the plant with honey stops nausea, and is a tonic for delirious persons.

40. **Merremia emarginata** Hall. f. (Under Kani)

A small creeping herb, flowering in July to October. The juice of the plant is used in cases of rat-bite.

SOLANACEAE

41. **Solanum nigrum** Linn. (Piludi)

An erect herb, flowering in June to January. The juice of the plant is useful for piles and stops blood-vomits. The fruits are used in fever. An infusion of the leaves is used to remove the effects of opium. The plant is used as a pot herb for disorders of the bile.

42. **Solanum xanthocarpum** Schr. et Wendl. (Bhony Ringani)

A prostrate, spreading, spiny herb; flowering in January to May. The plant is used in asthma and relieves pains of the body. A decoction of the roots is good for cough and fevers. The fruits are smoked to relieve pain caused by decayed teeth. The application of the juice of the plant with honey is highly praised as a remedy for baldness.

43. **Physalis minima** Linn. (Popti)

A herb, somewhat procumbent; flowering in August to September. The plant is a tonic. It increases secretion of milk.

44. **Withania somnifera** Dunal. (Ghoda Aasun)

A small hairy undershrub, flowering in September to March. The plant cures weakness and is good for fever.

45. **Datura metel** Linn. non auct. plur. (Dhanturo)

A small, succulent shrub; flowering in September to March (almost throughout the year). The fruit boiled in sweet oil is a superlative remedy for skin diseases. All parts of the plant are smoked in to cure cough. The juice of the plant is used for mumps and guinea-worm. The leaves and roots are applied on scorpion-sting and swollen parts.

SCROPHULARIACEAE

46. **Bacopa monnieri** Pennell. (Jalnevari; Bam)

A prostrate, spreading, succulent herb; flowering in August. Useful as a tonic in nerve weakness, asthma, and rheumatism.

47. **Striga euphrasioides** Benth. (Dholo Aagiyo)
An erect herb. Root parasite on grasses. Flowering in July to October. The plant improves appetite.

48. **Lindenbergia indica** O. Kuntze (Bhint Chatti)
A small, glandular herb Lithophyte. Flowering in August to November. The juice of the plant is used in chronic bronchitis.

OROBANCHACEAE

49. **Orobanche nicotianae** Wight (Vakunbo)
A herb. Root parasite on tobacco plants. Flowering in December to February. A fodder for cattle.

ACANTHACEAE

50. **Peristrophe bicalyculata** Nees. (Kali Anghedi)
A herb, flowering in August to January. Used in snake bite.

51. **Rungia parviflora** Nees. (Khadsheliyo)
A decumbent herb, flowering in August to October. Used in fever and cough.

VERBENACEAE

52. **Phyla nodiflora** Greene (Ratveliyo)
A prostrate, creeping herb; flowering in June to October. An infusion of the leaves is given to children suffering from indigestion.

LABIATAE

53. **Ocimum gratissimum** Linn. (Aavachi-Bavachi)
A herb, flowering in July to October. The seeds are used for headache and dysentery. The juice of the plant stops nausea.

54. **Anisomeles indica** O. Kuntze (Chodharo)
An erect herb, flowering in June to October. The plant is used as a tonic in uterine affections and fevers.

55. **Leucas aspera** Spreng. (Kubo)
An erect herb, flowering in August to November. The juice of the leaves is used for scabies, jaundice, fevers, and swellings.

NYCTAGINACEAE

56. **Boerhavia diffusa** Linn. (Punnarnava ; Satodo)
A decumbent herb, flowering in March to November (almost throughout the year). The plant is applied on swollen parts and

cures ulcers of animals. The plant is highly praised for its property of curing dropsy. It promotes urinary discharges. The roots are used in opthalmic troubles, jaundice, and asthma. It stops disorders of the brain and fever.

AMARANTACEAE

57. **Digera muricata** Mart. (Kanajero)

A small herb, flowering in July to September. The plant is used as a vegetable and has a laxative effect.

58. **Amarantus spinosus** Linn. (Kantalo Dabho)

An erect, spinous herb; flowering in August to September. The root is used in eczema. The leaves are sometimes used as a vegetable and have a cooling effect.

59. **Amarantus gracilis** Desf. (Dhimado)

An erect herb, flowering in August to September. Young shoots are eaten.

60. **Amarantus polygamus** Linn. (Tandalajo)

A herb, flowering in August to September. Used as a vegetable and cures bowel trouble. The leaves have a cooling effect. It stops cough and purifies blood. Used on scorpion-sting. A good tonic for dropsy.

61. **Aerva lanata** Juss. (Kapuri Madhuri)

A herb, in flower most of the year. The root is useful for headache.

62. **Achyranthes aspera** Linn. (Anghedo)

A herb, flowering in September to February. The entire plant and the seeds are useful. It is highly praised for stopping nausea. It cures fever, cough, indigestion, toothache, dropsy, swellings, and skin diseases. Its stem is very good for cleaning the teeth. The bark or the roots are applied on scorpion-sting. The leaves cure piles. An infusion of the young shoots or the seeds with honey is used for rat-bite.

63. **Alternanthera sessilis** R. Br. (Jal Jambvo ; Panini Bhaji)

A prostrate, spreading herb; flowering in July to September. The plant is a good tonic and is used for dropsy.

CHENOPODIACEAE

64. **Chenopodium album** Linn. (Chilni Bhaji)

A herb, flowering in January to April. Used chiefly as a vegetable. It is laxative and purifies the urine. The juice of the plant is applied on burns.

ARISTOLOCHIACEAE

65. **Aristolochia bracteata** Retz. (Kidamari)
A prostrate herb, flowering in June to September. The plant juice is applied for ulcers in animals. Cures fevers and intestinal worms. Applied on swollen parts.

EUPHORBIACEAE

66. **Euphorbia hirta** Linn. (Nagala Dudheli)
An erect herb, flowering in June to November (almost throughout the year). The plant is used in bowel troubles.

67. **Phyllanthus niruri** Linn. (Bhonya Amli)
A small, erect herb; flowering in June to September. The entire plant is used in fever. It cures disorders of the blood and bile. The leaves are used for jaundice, anaemia, and cough.

68. **Chrozophora prostrata** Dalz. (Betho Okhrad)
A prostrate herb, flowering in May to June. It is used for cold and cough. The seeds are purgative.

69. **Acalypha indica** Linn. (Dadaro ; Vinchhi Kanto)
An erect herb, flowering in July to November. The plant is useful in bronchitis and pneumonia.

COMMELINACEAE

70. **Commelina nudiflora** Linn. (Aakhalo-Bokhalo)
An erect herb, flowering in July to October. Its application is good for burns.

CYPERACEAE

71. **Cyperus rotundus** Linn. (Moth)
An erect, glabrous herb; flowering in July to October. The tubers are used for disorders of the stomach.

GRAMINEAE

72. **Eragrostis** sp. (Dabha ; Darbha)
A slender, glabrous grass; flowering in July. Very good fodder grass. The roots are used in fevers and cough, and promote urinary discharges.

73. **Cynodon dactylon** Pers. (Daro)
A perennial grass, flowering in July to October. It is used in Hindu pujas for Lord Shri Ganesh. It is best for lawns. A good

fodder grass. An infusion of the plant stops bleeding from piles. Used in haemorrhage, eczema, and brain troubles. Stops nausea and fevers. It is a very good remedy for irregular menses. It is said, and believed by the public, that the roots tied with cotton thread to the hand stop fevers.

## SUMMARY

The present paper puts on record the useful weeds occurring in the city of Baroda and on the Pavagadh Hill mentioning their medicinal properties. Such information was obtained in the first instance from local Ayurvedic practitioners. This paper is based on the collections made during the years 1954 to 1957. The names used locally for all the weeds occurring in these areas are also given.

## ACKNOWLEDGEMENTS

Our sincere thanks are due to Rev. Father H. Santapau, S.J., St. Xavier's College, Bombay, for going through this paper and for taking keen interest in this work, and for his very valuable suggestions given during the preparation of this paper. Thanks are also due to Shri Maganlal Mangalram Vaidya of Baroda and Shri A. P. Kothari of the Department of Botany, M.S. University of Baroda for corroborating the medicinal properties of the plants.

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[*From the* JOURNAL OF THE BOMBAY NATURAL HIST. SOC., *December* 1958.]

# MISCELLANEOUS NOTE

## 23. A RED OR ROSE VARIANT OF *POLYGALA ERIOPTERA* DC.

Those of our popular floras that mention the colour of the flowers of this plant state that it is yellow; on numerous occasions we have noted it to be so; but lately we have found plants with red or rosy pink flowers.

This is an annual monsoon plant that appears in grass fields or on grassy slopes some time about August; at first the plant bears a strong resemblance to some species of *Crotalaria,* from which, however, the structure of the sepals and of the fruits distinguish it clearly. The leaves are rather variable in shape and size, being obovate, or linear, or elliptic; flowers appear in few-flowered axillary racemes. Sepals 5, of which two are hyaline or colourless but for a strong green midrib. The petals are very irregular, somewhat united at the base, forming a sheath round the stamens; there are only 3 petals. Stamens 8. The fruit is a 2-seeded pubescent capsule enclosed within the two larger sepals; the seeds are smooth and hairy, with a distinct strophiole at the anterior end.

During the monsoon of 1957 this plant was collected repeatedly on Pavagadh Hill, 29 miles NE. of Baroda; during August and September the flowers were of the usual yellow colour; on October 2nd, 1957, we collected some plants with pink or rosy or reddish flowers, the colour remaining even when the flowers began to fade.

We have checked our plants with the descriptions given in our floras; the specimens have been confirmed in Blatter Herbarium as being *P. erioptera* DC. The colour of this species seems to be recorded here for the first time as being other than yellow.

We wish to record our gratitude to the Rev. Fr. H. Santapau of St. Xavier's College for helping with the identification of the plants and going through the MS. of this note.

DEPT. OF BOTANY,
M. S. UNIVERSITY OF BARODA,
BARODA,
*July* 5, 1958.

V. G. PHATAK, D.SC.
G. M. OZA, M.SC.

(From the Journal of the Bombay Natural Hist. Soc., August 1959.)

MISCELLANEOUS NOTE

# OCCURRENCE OF CURCUMA INODORA BLATT. AT PAVAGADH (GUJARAT)

Curcuma is one of the most difficult of our Indian plant genera. Plants of this genus are found all over India. In course of time we shall have to revise the genus Curcuma for the general flora of India. In view of this, and in response to Rev. Father H. Santapau's appeal (JBNHS, 1957) for more information, these observations on C. inodora, a new species described by Blatter in 1930, may be of interest. For a full description of the plant see Santapau, H. (1952) : 'On a common species of Curcuma of Bombay and Salsette Islands' JBNHS 51:135-139.

This is a monsoon herb about 50 cm. high, sprouting up in Pavagadh after the first few rains some time about July and August. Usually the leaves and spikes come out at the same time, or leaves come out before the flowering. The position of the spike in relation to the leaves is at first lateral. Later on in the season this lateral spike decays and gives way to a central one. The size of the spike is 8-10 cm. long and 5-7 cm. in diameter with a peduncle 4-6 cm. long; colour of the flowers : corolla purplish with a yellow streak on the lip, bracts green with a purplish to rosy tinge. The underground system is composed of long fibrous roots spreading up to 18-20 cm. from the rhizome, tubers 3 x 2 cm., elliptic or globose at the end of the root fibres, the inside of the tubers is white. A few decayed tubers

have also been noted at the end of these roots.

During the last two years, these plants have been observed and collected at the beginning, middle, and end of the monsoon from about the same spot on Pavagadh Hill, 29 miles NE. of Baroda. The plants are noted in rocky places near Machi at about 461 meters (1,500 ft.), a small plateau surrounded by dense forest. The identification of the plant has been checked and confirmed in Blatter Herbarium. This species seems to be recorded from here for the first time.

We wish to record our gratitude to Rev. Father H. Santapau, S. J., St. Xavier's College, Bombay, for helping with the identification of the plant and going through the MS. of this note.

Department of Botany,
M.S.University of Baroda,
BARODA.
January 13, 1959.

V. G. Phatak, D. Sc.
G. M. Oza, M. Sc.

# 4-WINGED FRUIT OF *TERMINALIA CRENULATA* ROTH.

By
V. G. PHATAK and G. M. OZA

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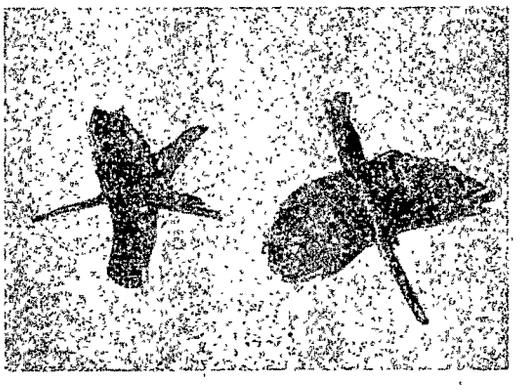
*Reprinted from "Curr. Sci.", Jan. 1960, 29, 25*

## 4-WINGED FRUIT OF *TERMINALIA CRENULATA* ROTH.

COOKE in his *Flora of the Presidency of Bombay* described this tree under *Terminalia tomentosa*. Locally known as *Sajad*, these large deciduous trees which are fairly common in the forest at Pavagadh Hill, 29 miles NE. of Baroda (Bombay State), afford a valuable timber and are next to Teak in this district. For a complete description and synonymy of the Bombay plant *see* Santapau in *Jour. Bombay Nat. Hist. Soc.*, 1951, 50, 305–06.

Writers of our popular floras, who mention the fruits of this plant, state that they are 5-winged. The fruits are normally 5-winged, as indicated even by the synonym *Pentaptera crenulata* and on numerous occasions we have noted it to be so. However, on 23rd April 1959, we found many 4-winged fruits. This has not been recorded in our floras. The 4 cm. long fruit is glabrous, about 4 cm. diam. including the 4 thin wings; venation of the wings includes numerous faint nerves which run horizontally from the axis to the edges.

The fruits are properly preserved and kept in the Herbarium of the Department of Botany, M. S. University of Baroda.



5-winged 4-winged

FIG. 1. Fruits of *Terminalia crenulata* Roth.

We are grateful to Rev. Father H. Santapau, S.J., St. Xavier's College, Bombay-1, for making many helpful suggestions in the preparation of this note.

Department of Botany, M. S. University of Baroda, Baroda, *August* 10, 1959.

V. G. PHATAK.
G. M. OZA.

(Reprinted from the *Indian Forester*, Vol. 86, No. 5).

# *JACQUEMONTIA PENTANTHA* (JACQ.) G. DON. FROM PAVAGADH

By A. R. Chavan & G. M. Oza,

*Department of Botany, M.S. University of Baroda, Baroda.*

Cooke in his *Flora of the Presidency of Bombay* noted this plant under the name of *J. caerulea*: the plant species is a native of Tropical America and is cultivated in gardens in Bombay. A look at the synonyms reveals that it has also been placed under the genus *Convolvulus* thus confusing the nomenclature. Choisy (1845) in his introduction to the CONVOLVULACEAE [DC. Prod. . IX (1845)] concludes that the synonymy of the species is already obscure. We do not wish to make it more obscure by bringing into existence a new species and proposing a new name. In fact, we did find our plant among the *Jacquemontias*. The identification of the specimen has been confirmed in Blatter Herbarium as being *J. pentantha* (Jacq.) G. Don. We have checked our plant with the description given in the floras and it differs to a great degree. The nomenclature of the plant is as follows:

*Jacquemontia pentantha* (Jacq.) G. Don. in Gen. Syst. IV. 283. (1838).

*Convolvulus pentanthus* Jacq. Coll. IV. 210 (1790).

*Convolvulus violaceus* Vahl. in Symb. Bot. III. 29. (1794).

*Jacquemontia violacea* Choisy. in Mem. Soc. Phys. Genev. VIII. 1. (1838) 61.

*Jacquemontia caerulea* Cooke (1905). (non Choisy. in Mem.Soc. Phys. Genev. VI. (1833) 476).

Our plant differs from the description given in standard works in the following respects:

It is a twiner with slender, hairy stems. The leaves are ovate, acute, not at all cordate and about less than half the size of those of the cultivated species; presence of minute hairs; arrangement of leaves entirely on one side.

On 12th August 1958, this plant was noted on hedges in the forest at the foot of the Pavagadh hill, probably as an escape from cultivation. It is apparently growing wild as none of the *Jacquemontias* are cultivated either on the hill or in the plains which surround the base of the hill. Baroda, a place about 29 miles away from the present hill is the only spot where this species is cultivated in the gardens.

We wish to record our thanks to Rev. Father H. Santapau, S. J., F. N. I., St. Xavier's College, Bombay, for help in the identification of the plant and making useful suggestions in the preparation of this note.

[*From the* JOURNAL OF THE BOMBAY NATURAL HIST. SOC., *December* 1960]

# MISCELLANEOUS NOTE

## 27. *CUCUMIS SETOSUS* COGN.—A NEW RECORD FOR BOMBAY

(*With one plate*)

In our exploration of Pavagadh Hill, 46.6 km. NE. of Baroda, we have come across a cucurbit which is not described in our common floras. Chakravarty (1959) in his recent monograph on the Indian Cucurbitaceae describes this plant. A few notes on the distribution of the same are interesting.

*Cucumis setosus* Cogn. in DC. Monog. Phan. 3: 491. 1881; Chakravarty, Mon. Ind. Cucur. 106, f. 44, A-D & f. 45, map 51, 1959.

A slender climber, monoecious. Stem furrowed, clothed with minute coarse hairs. Tendrils slender. Leaves 2-2.4×2.1-2.6 cm., membranous, deltoid, feeling roughish to the touch, acute, minutely dentate, 3-lobed, 5-nerved, petiole 6-9 mm. long. Flowers small, solitary, yellowish. Calyx tube campanulate, hairy. Corolla glabrous. Ovary globose, oblong; covered with short soft hairs. Fruit setose (covered with bristles).

Flowering and Fruiting: 26th September 1959.

Records from India: (*a*) Chakravarty lists two specimens for India. 'In Eastern India (*Ritchie* 321 Herb. Edin.); without precise locality, probably peninsular India (Witt, no. 191 A. 5-D,25/10/12 Herb. Cal.).' (*b*) The specimen referred to in the present note was collected by the junior author from Pavagadh, in the forest at an altitude of 461 m. on 26-9-1959, and is preserved in the Herbarium, Department of Botany, M.S. University of Baroda.

*Index Kewensis* gives India as the home of this plant. Chakravarty, loc. cit., mentions only two sheets so far available. Of these two sheets, the one of Ritchie is from eastern India and that of Witt is *probably* from peninsular India without any further details.

The plant seems to be endemic in S. India; it has not been recorded from Bombay. It is, therefore, a new record.

DEPARTMENT OF BOTANY,
M.S. UNIVERSITY OF BARODA,
BARODA,
*July* 25, 1960.

A. R. CHAVAN
G. M. OZA

similar general flowering practically all over Bombay and southwards to the limit of the distribution of the plant. Further it seems to have coincided also with a general flowering of *Phlebophyllum kunthianum* Nees (=*Strobilanthes kunthianus* T. Anders.) in the south of India. In 1957 there was no general flowering of *Carvia callosa* in Bombay, except for Pavagadh Hill near Baroda; a few plants were noted in flower in Mahableshwar, Khandala, etc. On the other hand, to judge from the remains noted on the Kodaikanal Hills in May of this year, there seems to have been a general flowering of *Phlebophyllum* on the Palnis and Nilgiris.—EDS.]

[*From the* JOURNAL OF THE BOMBAY NATURAL HIST. SOC., *December* 1959.]

# MISCELLANEOUS NOTE

## 30. NOTES ON THE FLOWERING OF *CARVIA CALLOSA* BREMEK. (=*STROBILANTHES CALLOSUS* NEES)

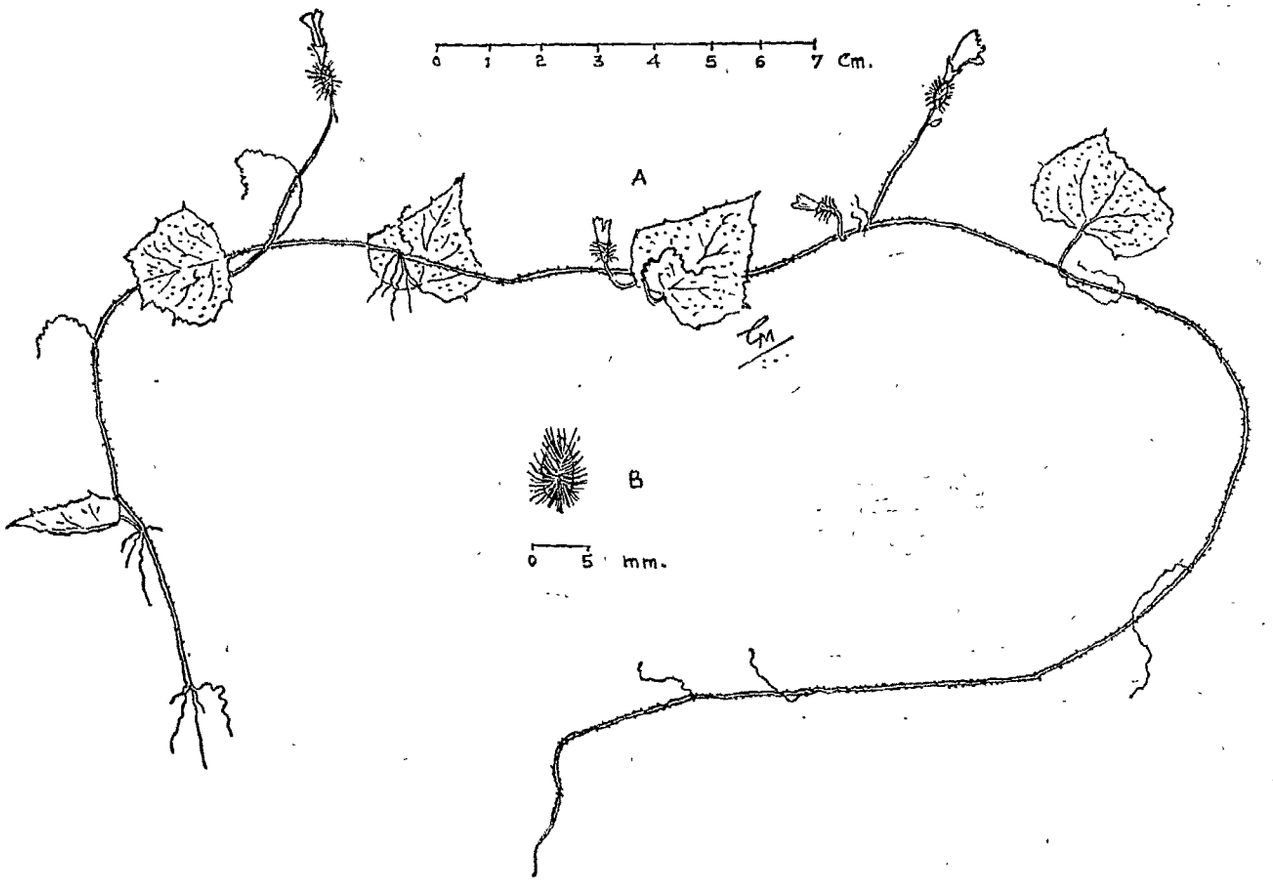
Rev. Father H. Santapau (1955) in his paper on Excursion of the Indian Botanical Society to Pavagadh Hill near Baroda, on January 7th, noted this plant as 'only occasional in the lower half of the slopes; abundant in almost pure stands on the upper half in leaf only'. In the subsequent year a few plants flowered. Mr. B. B. Joshi (1956) collected this plant in flower (*Joshi*, 23-9-1956, 326 P.). In the succeeding year (1957) we observed the general flowering on the slopes of the hill (up to about 523 metres) in the months of September-November (*Oza*, 1-9-57, 103 and 6-11-57, 262). This shrub with bright purple flowers having the bracts green with a pink tinge, and pleasing scent, reached the height of about 60-120 cm., presence of minute hairs on the margins of leaves, stems squarish with continuous furrows; the plant species being fairly abundant on the upper half of the slopes of the hill. By the month of May in 1958, dried plants were noted on the same slopes of the hill. Observations during the months of September-November in the same year helped us to note only a few small plants in flower. The flowering was then random.

The year 1956 witnessed the partial flowering only and hence it could not be called general. As the general flowering occurred in 1957, the authors expect the next general flowering to take place some time about 1963. Further observations on the next general flowering of this plant will be reported to the *Journal* immediately it occurs either before or after 1963.

DEPARTMENT OF BOTANY,
M.S. UNIVERSITY OF BARODA,
BARODA,
*February* 28, 1959.

V. G. PHATAK, D.SC.
G. M. OZA, M.SC.

[The general flowering of *Carvia callosa* Bremek. reported in this note as having taken place in 1957 on Pavagadh Hill is of interest in one respect. When in the past there has been a general flowering of *Carvia* on any of the hills near Bombay, it has coincided with a




*Cucumis setosus* Cogn.
A. Flowering branch; B. Fruit.

# FIELD NOTES ON THE SYSTEMATICS OF *CURCUMA*-*CURCUMA PSEUDOMONTANA* GRAHAM AT PAVAGADH

By

**A. R. Chavan** and **G. M. Oza**

During the botanical exploration of Pavagadh we were fortunate enough to observe and record the occurrence of *Curcumas*. We have been deeply interested in the study of the most difficult of our Indian plant genera—the *Curcuma*. A note by the junior author (1959) in JBNHS. 56: 368-69 was published with field observations on *C. inodora* Blatt.

To confirm the determination of *C. pseudomontana*, the specimens were sent to the Indian Botanic Garden, Calcutta. The identification turned out to be *C. ranadei* Prain. Prain's *C. ranadei* is synonymous with Graham's *C. pseudomontana*. During last three years, we have made ample collections and recorded plenty of data on *C. pseudomontana*, some of which we wish to present in the present note. The scitamineous plants were observed and collected at the beginning, middle and end of the monsoon from about the same spot on Pavagadh Hill, 46.6 km. NE. of Baroda. The plants are clearly localised in rocky grounds protected from the sun, near Machi at about 461 m.;—a small plateau surrounded by dense forest. A few plants are also noted in exposed grounds at the top of the hill at about 864 m. For nomenclature, full description of the plant, and importance of the subject see Santapau, H. (1945): *Curcuma pseudomontana* Grah. JBNHS. 45: 618-23.

## Key to the Pavagadh Curcumas

Corolla purplish with a yellow streak on the lip, bracts green with a purplish to rosy tinge, tubers white inside .. .. .. .. ... *C. inodora*

Corolla yellow, bracts green with a purplish to reddish tinge, tubers yellowish inside .. .. *C. pseudomontana*

Curcuma pseudomontana Grah. in Gr. 210, 1839; C. 2: 730; D. & G. 275; Lisboa in JBNHS. 2:141; Watt, Dict. Econ. Prod. 2: 669; Santapau in JBNHS. 45: 618-23.

*C. ranadei* Prain in JBNHS. 11: 463, 1898; Woodrow in JBNHS. 12: 520.

*C. montana* Baker in FBI. 6: 214, 1890; pro parte (not of Roscœ.); Roxb. Fl. Ind 1: 35; Woodrow in JBNHS. 12: 520; Index Kew. 1: 672.

This is a stemless monsoon herb sprouting up in Pavagadh after the first few rains sometime about July and August. Leaves are green, entire, oblong

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lanceolate, acuminate, base acute, mid-rib prominent, venation parallel; the number of leaves per plant is four and in some cases five, the size of the leaf-blade is 16-25 × 6-10 cm. and that of the petiole from ground level to leaf base is 20 cm. We do not find any difference between the size of the leaves of plants growing in exposed grounds or in the areas protected from the Sun and at different altitudes. Leaves come out before the flowering but usually the leaves and spikes come out at the same time. The position of the spike in relation to the leaves is at first lateral. Later on in the season this lateral spike decays and gives way to a central one. The plants observed on 15-7-'58 had lateral spikes along with minute central ones covered by the leaf sheaths. On 12-8-'58, the plants had central spikes surrounded by the tuft of leaves. The size of the spike is 6-9 cm. long and 4-7 cm in diameter with a peduncle 5-9 cm. long, at times reaching 12 cm. length; colour of the flowers: corolla yellow, bracts green with a purplish to reddish tinge. Most of the flowers are infested by some insects. The underground system is composed of long fibrous roots spreading upto 5-7 cm. from the rhizome, tubers 1.5-2 × 1 cm., elliptic or globose and at the end of the root fibers, the inside of the tubers is yellowish.

**Acknowledgement**

We record our sense of gratitude to late Dr. D. Chatterjee of Indian Botanic Garden, Calcutta, for helping in the identification. Thanks are also due to Rev. Father H. Santapau, S. J., F.N.I., St. Xavier's College, Bombay, for kindly going through the MS. of the note.

Department of Botany,
The M. S. University of Baroda,
Baroda.

# FASCIATION OF A LEAF IN *HOLARRHENA ANTIDYSENTERICA* (LINN.?) WALL. EX A. DC. AND *POLYALTHIA LONGIFOLIA* (LAM.) HOOK. F. ET THOMS.

By

**A. R. Chavan and G. M. Oza**

*Holarrhena antidysenterica*,* a member of the family Apocynaceae is of high repute in ayurvedic medicine. Its local name in the region of Gujarat is 'Indrajav'. These are shrubs or small trees, about 240 cms. high and are fairly common in the lower parts of the Pavagadh Hill, 46.6 km. NE. of Baroda (Gujarat State).

During the course of a botanical trip to the deciduous forest of this hill, the authors collected a few specimens of this plant for the Herbarium. On a careful examination of the specimens it was found that the leaf was fasciated. Ordinarily, the leaves of this plant species are entire and simple. The abnormal leaf has but a solitary petiole, though two clear mid-ribs end in their respective leaf apexes and proceed downwards to unite just near the base of the leaf only: each of the lobe has its own venation (Fig. 1).

*Polyalthia longifolia*,† a member of the family Annonaceae is cultivated as a road side tree in Baroda. Its local name in the region of Gujarat is 'Asopalav'. The leaves of this anonad are used for decoration in religious ceremonies.

The leaves of this plant species are entire and simple. But the authors have come across a fasciated leaf, just similar to the one found in *Holarrhena*. The disposition of the venation in the abnormal leaf is similar to that described above (Fig. 2).

Fasciation, a familiar plant irregularity or teratological abnormality, occurs among vascular plants. Apocynaceae and Annonaceae are among those plant families in which fasciated individuals have been recorded.[4] Singh and Sinha recorded cases of fasciated leaf- a homologue of two normal leaves in *Boerhavia repanda* Linn., *Mirabilis jalapa* Linn. and *Ficus religiosa* Linn., very similar to

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Added in the Proof:—

* DC. bases this species on *Chonemorpha antidysenterica* Don. Gen Syst. 4 : 76. If L. is a *nom. ambi*, we have to ignore it; then it is better not to cite (Linn.). *But this cannot be established without looking at the types.* We have *not* seen the Linnean type and therefore, leave it as it is at the moment.

† This comes under Article 32, paragraph no 2 of the *Int Code of Bot. Nomenclature* (1956). We do not yet know for certain who first made the combination *P. longifolia*. On the subject, see Santapau (1953) in the *Indian Forester* 79 : 611-13.

those described in the present note.[2,3] However, no reference has been given to the fasciation of a leaf in these plant species by Masters[1] and Worsdell.[5]

The specimens are preserved and kept in the Herbarium of the Department of Botany, M. S. University of Baroda, Baroda.

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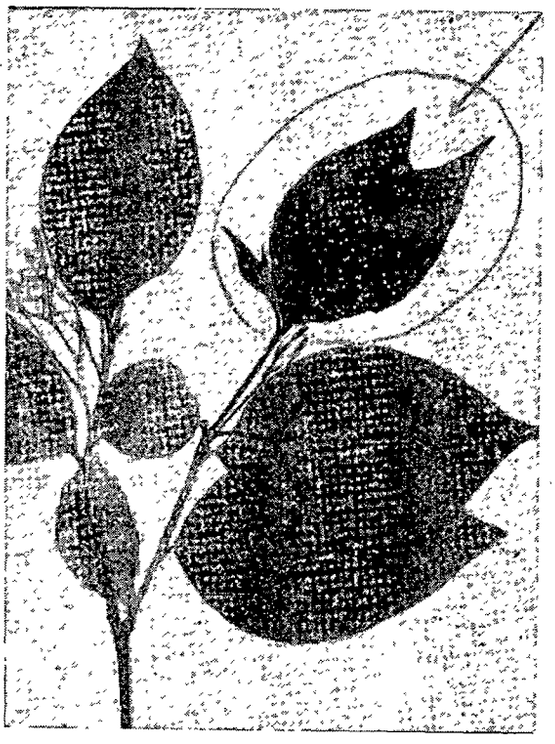
3. ————. Notes on the Teratology of Certain Indian plants—V, VI, Ibid, 9, 248-49, Pl. II, fig. 6; 10, 134-35, fig. 5 (1930-31).
4. White, O. E., Fasciation, *Bot. Rev.*, 14, 319-58 (1948).
5. Worsdell, W. C., *The Principles of Plant Teratology*, Vol. I, (Ray Society, London, 1915).

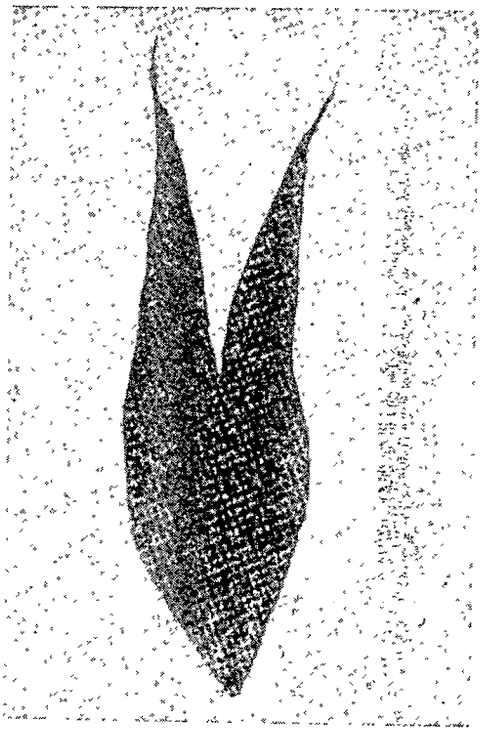

Department of Botany,
The M. S. University of Baroda, Baroda.

Fig. 1



Fasciation of a leaf in *Holarrhena antidysenterica* (Linn.?) Wall. ex A. DC.

Fig. 2



Fasciation of a leaf in *Polyalthia longifolia* (Lam.) Hook. f. et Thoms.

(Reprinted from the *Indian Forester*, Vol. 87, No. 4)

# THE IDENTITY OF THE GENUS *BIDENS* OF BOMBAY—THE LINNEAN PLANT FROM PAVAGADH

By A. R. Chavan and G. M. Oza

*Department of Botany, M.S. University of Baroda.*

The fairly common western Indian plant, as given in Indian floras and listed by *Cooke* in his *Flora of the Presidency of Bombay* 2: 44, 1908, is *Bidens pilosa* Linn. But Sherff in his monograph on the genus *Bidens* has shown that the common western Indian plant is not *Bidens pilosa* Linn. Accordingly, the up-to-date nomenclature of the plant is: *Bidens biternata* (Lour.) Merrill and Sherff.

Theodore Cooke, loc. cit. remarks: "I have not attempted to keep the var. *bipinnata* Hook. f. Fl. B. I. 3: 309, 1882, (*B. Wallichii* DC.), distinct from *B. pilosa*. The most common, indeed almost the only, form in the Bombay Presidency is this variety, but the leaves of the plant are so variable and so variously cut that I agree with Trimen (Fl. Ceylon. 3: 40) that the variety is scarcely worth distinction."

In our exploration of Pavagadh Hill, 46.6 km. NE. of Baroda, we have come across plants of *B. bipinnata* Linn. (*OZA* 112, 186). The present note is being written with a view to help in the identification of *Bidens* plants from Bombay.

Sherff in his recent monograph has given a key on page 60 to separate the following three unlike and truly distinct species: *Bidens bipinnata*, *B. biternata* and *B. pilosa*. But one can keep aside all the minor details for the three species and their varieties as given in the monograph, and can say in short that the forms of *B. pilosa* have dilated tips for the exterior phyllaries or involucral bracts, whereas the other two species do not. Further the leaflets of *B. bipinnata* are all or virtually all 1-2-pinnate whereas in *B. biternata* only the basal leaflets may be compound (tripartite).

The conclusion is that the Pavagadh plant which we recently got examined by Mr. Sherff, is the Linnean plant—*B. bipinnata*. Moreover, the two valid species in the Bombay Presidency are *B. biternata* and *B. bipinnata*.

We record our sense of gratitude to Mr. Earl E. Sherff of Michigan, U.S.A., for kindly helping in the identification of our specimens of *Bidens* from Pavagadh, and to Rev. Fr. H. Santapau, S.J., St. Xavier's College, Bombay, for his valuable suggestions during the preparation of this note.

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Santapau, H.—The Fl. of Khandala on the Western Ghats of India. In *Rec. bot. Surv. Ind.* 16 (1) : 151, 1953.

(From the Journal of the Bombay Natural Hist. Soc., April 1961.)

# MISCELLANEOUS NOTE

## MOMORDICA DENUDATA CLARKE (CUCURBITAC.) AND TREMA POLITORIA PLANCH. (ULMAC.) NEW RECORDS FOR BOMBAY

In our exploration of Pavagadh Hill, 46.6 km. NE. of Baroda, we have come across Momordica denudata and Trema politoria which are not listed in Cooke's Flora of the Presidency of Bombay.

Momordica denudata (Thwait.) Clarke in FBI. 2:618, 1879; Cogn. in DC. Monog. Phan. 3:448; Trimen, Fl. Ceyl. 2:249; Chakravarty, Mon. Ind. Cucur. 98, f. 40, map 47, 1959.

M. dioica var. denudata Thwait. Enum. Pl. Zeyl. 126, 1858-64.

A slender climber; stem glabrous, furrowed. Tendrils slender. Leave 7-8 x 6-6.5 cm., membranaceous, ovate-cordate, mucronate-acuminate, dentate, slightly rough to the touch, some of the leaves appear to be three-lobed, 5-nerved, petiole 3-4 cm. long. Flowers yellowish, dioecious. Male peduncle many-flowered. Female peduncle 1-flowered, 1-2 cm. long. Fruit slightly globose, rostrate.

Flowering and Fruiting: 12th July 1959.

At the foot of the hill on a hedge; rare.

Index Kewensis gives Ceylon as the home of this plant. The plant seems to be endemic in S. India.

Trema politoria Planch. in Ann. Sc. Nat. (ser. 3) 10:326, 1848; FBI. 5:484.

Celtis politoria Wall. Cat. no. 3693, nom. nud.

A small tree; bark brownish, branches clothed with rough hairs. Leaves 4-5 x 2.5-2.7 cm., stipulate, 3-4-nerved, alternate, oblique, presence of bristly hairs, ovate, minutely cordate, serrate, petiole 2-3 mm. long. Flowers in axillary cymes, compact, not longer than the petiole.

Flowering and Leafing: 12th August 1958.

In the forest, in lower part of the hill; rare.

Index Kewensis gives Reg. Himal. as the home of this plant.

The specimens referred to in the present note were collected by the junior author from Pavagadh and are preserved in the Herbarium, Department of Botany, M.S.University of Baroda.

These two plants have not been recorded from Bombay. They are, therefore, new records for Bombay.

Acknowledgements

We record our sense of gratitude to Shri. M.B.Raizada, F.N.I., Forest Research Institute, Dehra Dun, and to the late Dr. D. Chatterjee of Indian Botanic Garden, Calcutta, for helping in the identification.

Department of Botany,
M.S.University of Baroda,
BARODA,
December 31, 1960.

A. R. Chavan
G. M. Oza

( In the Journal of the Bombay Natural Hist.Soc.; in press.)

# New Host Plants for Dendrophthoe falcata (Linn.f.) Etting. at Pavagadh.

By

A. R. Chavan and G. M. Oza.

Botany Department, M. S. University of Baroda.

## Introduction

Recently Shri. V. Ravindra Nath & V. L. Narasimha Rao (1959) in their paper on Additional Hosts for Flowering Parasite, Dendrophthoe falcata (L. f.) Ettingsh (Loranthus longiflorus Desr.), have brought together all the scattered data on the subject from different parts of India thus putting before the readers an up-to-date host range of Dendrophthoe falcata to 268.

During the exploration of the flora of Pavagadh for the year 1958-59 we have on several occasions noticed Dendrophthoe falcata, a parasite on different host plants. This paper reports the attack of Dendrophthoe falcata on 5 new host plants, recorded for the first time in India. This brings the host range of Dendrophthoe falcata to 273. The host plants noticed are: Cadaba fruticosa Druce, Firmiana colorata R. Br., Ailanthus excelsa Roxb., Butea monosperma (Lam.) Taub., Tecoma stans H.B.K.

## Past Records from Pavagadh

Rev. Fr. Santapau (1955) in his paper on Excursion of the

Indian Botanical Society to Pavagadh Hill near Baroda recorded the parasite as very rare for this type of forest. The plant in flowers and young fruits was noticed on the following hosts: Alangium salvifolium, Grewia tiliaefolia, Cassia fistula, Acacia leucophlaea. It seems that, of the four host species recorded above, Alangium salvifolium has not been included in the list of host plants recorded in India published by V. Ravindra Nath. & V. L. Narasimha Rao; hence due credit for the new record should be given to Santapau. It is for the first time that the family Alangiaceae acts as a host for the parasite.

Phatak and Oza (1957-58) in their paper on Contributions to the Botany of the Pavagadh Hill, Bombay State, under the heading 'Parasites and Epiphytes' recorded four more host plants other than those recorded by Santapau. The hosts noticed were Salmalia malabarica, Mangifera indica, Cordia dichotoma, Tectona grandis; all of which were recorded for the first time from Pavagadh.

Annotated List of New Host species of Pavagadh

New host plants given in the following list are arranged according to families in a natural sequence. The parasite is a branch-parasite, leaves thick and variable in shape, flowers - orange coloured.

CAPPARIDACEAE

1. Cadaba fruticosa Druce

It is for the first time that the genus Cadaba acts as a host for this parasite.

STERCULIACEAE

2. Firmiana colorata R. Br.

The parasite has attacked on a new species in the genus Sterculia.

The host plant is a new record for Gujerat. According to Cooke this is found throughout the Konkan and Deccan forests. Talbot in his Forest Flora of Bombay has reported that it is also found throughout the Presidency. However, this has not been recorded in Gujerat by Cooke in the Flora of the Presidency of Bombay, Saxton and Sedgwick in Plants of Northern Gujerat and Santapau in Contributions to the Botany of the Dangs Forest, Bombay State.

SIMARUBACEAE

3. Ailanthus excelsa Roxb.

This is the first time that the family Simarubaceae has been touched by this parasite. About 54 plant families have been recorded as being parasitized by Dendrophthoe falcata and now the family Simarubaceae is an addition to the previous record.

PAPILIONACEAE

4. Butea monosperma (Lam.) Taub.

This is for the first time that the genus Butea has been attacked by this parasite.

BIGNONIACEAE

5. Tecoma stans H. B. K.

The parasite has attacked a new species in the genus Tecoma.

## Acknowledgements

Our sincere thanks are due to Rev. Father H. Santapau, S. J., F. N. I., St. Xavier's College, Bombay, for his valuable suggestions given during the preparation of this paper.

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# INDIGOFERA ASTRAGALINA DC. NEAR BARODA

By

A. R. Chavan & G. M. Oza

Department of Botany, M.S.University of Baroda, Baroda.

A fairly common plant, as given in Indian Floras and listed by Cooke in his Flora of the Presidency of Bombay 1:319, 1903, is said to be Indigofera hirsuta Linn. In our parts of the district its local name is Runchhali (meaning hairy) in Gujarati.

There seems to be a lot of confusion over the Linnean plant Indigofera hirsuta and De Candolle's Indigofera astragalina. Gillett, loc. cit. recognises I. astragalina and I. hirsuta as distinct species. The species in question come very near each other and may be easily confused in the field.

In view of the recent paper - "Indigofera hirsuta L. and I. astragalina DC." by Gillett in Kew Bulletin 14(2): 290-95, 1960, we have re-examined our herbarium specimens, hitherto known as I. hirsuta Linn. The plants (OZA 77, 1519, 1520) which form the basis of the present note were collected in our rambles from the lower parts of the Pavagadh Hill in the deciduous forest. The area lies between 73°-29' & 73°-33' E. and 22°-26' & 22°-30' N. and is situated 46.6 km. NE. of Baroda.

The differentiating characters of I. astragalina as worked out by Gillett seemed to fit the Bombay plant and it appeared that

the conclusion will prove us right. In order to remove some doubts about the exact position of our plant, the specimens were sent to the Royal Botanic Gardens, Kew, for critical examination by Mr. Gillett. In Mr. Gillett's letter of 30th January 1961 we find the following reply: " ..... They are I. astragalina DC. ..... If you could obtain seed of the true I. hirsuta from S. India or Ceylon and grow it alongside your local Baroda astragalina it would be an interesting experiment....." Moreover, the authorities at Kew have obliged us by sending for comparison two sheets of I. astragalina ( D. B. Fanshawe, No. F. 3263 of 3-5-1957; J. T. Davey, No. 208 of 8-1-1955) and one of I. hirsuta (H. G. Faulkner, No. 2060 of 3-7-1957) from Africa, since they have no spare sheets from India.

This note is written with a view to help in the identification of these plants from Bombay. The nomenclature of the plant is:

Indigofera astragalina DC. Prodr. 2:228, 1825; Gillett in Kew Bulletin (Additional series I) 110, 1958 and in Kew Belletin 14(2): 290-95, 1960.

I. hirsuta Linn. sensu Baker, FBI. 2:98, 1879, p.p. non Linn.; C. 1: 319; D. & G. 60; G. 312.

Examination of specimens in the field and herbarium and their comparison with the sheets from Kew, reveals the differences between the two confused species as given below:

| | *hirsuta* | *astragalina* |
|---|---|---|
| Breadth of pod in mm. | 2-2.1 | 3-3.2 |
| Number of seeds in the pod | 7-8 | 4-5 |
| Colour of hairs on the dorsal side of pod | Dark (-Brownish?) | White |
| No. of leaflet-pairs on any one leaf | 3-4 | 4-5 |
| Length of peduncle in mm. | 35-100 | 15-25 |
| Length of pod in mm. | 15-18 | 11-15 |

Gillett, loc. cit. 1960, gives, a key to separate these two species:

"Longer peduncles nearly always over 25 mm. long; pod usually 6-9 seeded, c. 2 mm. wide, some, or all, of the hairs on its dorsal surface usually brown; largest no. of leaflets on any one leaf usually 7, less often 9 _____ *hirsuta*.

Longest peduncle under 25 mm. long; pod usually 4-6-seeded, c. 3 mm. wide, the hairs on its dorsal surface usually white; largest no. of leaflets on any one leaf usually 9 or 11, occasionally 7. _____ *astragalina*."

From this, it could be concluded that in contrast to *I. hirsuta*, *I. astragalina* has broad fruits, less number of seeds, dorsal side of the pod white-haired, short peduncles and pods.

It seems that most Indian botanists are unaware of the occurrence of *I. astragalina* in India. It is interesting to note that *I. astragalina sensu stricto* is not described in our common

floras; Baker, loc. cit. has listed a plant under the name of I. hirsuta Linn. and has referred to De Candolle. Cooke in describing the Bombay plant gives reference to Baker. Gillett in his papers on Indigofera makes brief statements as to the occurrence of the plant from various parts of India including Bombay. But in this context it may be remarked that Gillett himself has put little reliance on the literature in working out distributions, in view of the doubtful nature of many identifications in Indigofera.

We are inclined to follow Gillett. The conclusion is that the commoner species in the Bombay Presidency is I. astragalina and not I. hirsuta which is mostly known in Southern India.

In the end, it will not be out of place if we quote Gillett, loc. cit. 110, 1958. " It is remarkable that, while botanists dealing with African plants have, since 1825, more or less consistently distinguished I. astragalina from I. hirsuta, those dealing with Indian plants have, until now, confused them. This may be because De Candolle's type seems to belong to an unusually few-seeded form of the species which may not exist in India ....."

For a full discussion on the question of possible introgression, the authors beg to refer the reader to Mr. Gillett's 1960 paper and request the interested workers in plant genetics to investigate and help us know whether I. astragalina and I. hirsuta will hybridise when cultivated side by side, either spontaneously or with artificial assistance.

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